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HARVARD BUSINESS REVIEW

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THE PRESENT STATUS OF WHOLESALE TRADE

By MELVIN T. COPELAND

I

THE present status of wholesale trade in the United States is "unsettled." In nearly every line of industry some of the major problems to which especial attention is being given by business men at the present time are the problems of wholesale distribution.

In the grocery trade, for example, the service wholesalers—that is, those who carry stocks, employ traveling salesmen, and grant credit to their customers, and through whose hands practically all groceries passed a generation ago—are now handling a substantially smaller share of the total grocery business than they formerly handled. This change has resulted, to a small extent, from the increased volume of sales direct to unit stores by several manufacturers, such as Procter & Gamble Company, but more largely from the growth of chain store companies, retailers' cooperative buying associations, cash-and-carry wholesalers, and desk jobbers, so called. In an effort to meet these competitive conditions, several service wholesalers have opened chains of cash-and-carry wholesale stores, and several others have organized groups of retailers, each group to sell under a common brand and to buy their merchandise from a single wholesale grocer. Whether or not these experiments prove successful ultimately, they have the temporary effect of adding to the unsettlement in the industry.

In the drug trade the service wholesalers have likewise been subjected to increasing competition from chain store companies and retailers' cooperative buying associations. In the electrical trade the two largest manufacturing companies are reported recently to have acquired control of groups of jobbers in order to be able to direct the wholesale distribution of their products. These jobbers continue to handle the products of various other manufacturers, but, obviously, a new set of conditions is certain to exist for the industry at large.

In the hardware trade the service

wholesalers have been less affected, perhaps, than the service wholesalers in most other trades, but even in the hardware trade the competition between the national wholesalers and the local wholesalers is keen, and various manufacturers are more or less restless regarding the methods of wholesale distribution. One of the outstanding events in the wholesale hardware trade in recent years has been the merger of the Winchester Company with the Simmons Hardware Company, which was the result of very special circumstances, but which, nevertheless, placed a large manufacturing company in control of a large wholesale business. In the paint and varnish trade, which is closely related to the hardware trade, manufacturers commonly sell directly to large retailers, and several manufacturing companies have recently opened chains of retail stores. As a result, numerous paint and varnish wholesalers are not prosperous.

In the wholesale dry goods trade, conditions are particularly unsettled. The bulk of the cotton goods which are sold by the yard in retail stores, it is true, still pass through the hands of the service wholesalers. On the basis of data obtained on the distribution of textiles in 1924, it was concluded that between 80% and 90% of the cotton goods which were sold at retail as piece goods were handled by wholesalers.[1] In the silk trade a somewhat smaller percentage of the piece goods went through wholesalers' hands. In the hosiery trade, although no exact figures are available, a still smaller proportion of the output probably is handled by wholesalers. The piece goods figures, furthermore, do not tell the whole story for the cotton industry, because the sales of ready-to-wear goods and of other fabricated articles have been increasing more rapidly, it is believed, than the sales of piece goods in retail stores, and much of the ready-to-wear merchandise does not pass through wholesalers' hands. The unsettled conditions in the wholesale dry goods trade also are indicated by the liquidation, merger, or bankruptcy of numerous dry goods firms during the last two years. Claflins, Incorporated, of New York City, for instance, one of the national dry goods wholesalers, decided a year ago to liquidate its business. Another large wholesale dry goods firm, the John V. Farwell Company, of Chicago, sold its business to Carson, Pirie, Scott & Company. Several wholesalers located in cities on the Missouri River sold or liquidated their businesses, and in the entire country from New England to the Pacific Coast there has been a disappearance from the market of a considerable number of wholesale dry goods firms.[2] The recent changes in the dry goods trade have been caused, in part, by the activities of the chain store companies, buying syndicates, and the practices of several manufacturers in selling directly to department stores. A more potent cause for the changes in the wholesale dry goods trade, however, has been the shifting of markets. With the construction of good roads and the increased use of automobiles, the trade in dry goods stores located in small towns has tended to decline, and the services of wholesalers for supplying those stores, therefore, have been less in demand.

In the shoe trade the old-line wholesalers handled only a small fraction of the total business 15 years ago, and they

[1] Harvard University, Bureau of Business Research, Bulletin No. 56, *Distribution of Textiles*, p. 155.

[2] Such changes are not a new phenomenon in the wholesale dry goods trade. Several marked changes had occurred prior to 1915. See Paul T. Cherington, *The Wool Industry*, pp. 140-150.

have not strengthened their position. There has been an increase recently in the number of small shoe wholesalers of a new type handling novelty styles, at least in the New York market, but the conditions there are far from static. In the garment business in New York City, wholesalers have recently appeared, but they still handle only a small fraction of the business.

The conditions in the trades to which reference has been made in the foregoing statements are typical of the conditions in the wholesale trade in consumers' goods generally. There are variations between trades, but nowhere is the wholesale business being conducted by what might be called settled methods.

In marketing industrial goods similar conditions exist. In the chemical industry, for instance, since 1918 several manufacturers who formerly distributed their products through dealers have undertaken to sell directly to users. In some instances these manufacturers sell only in car lots, thereby giving jobbers or dealers an opportunity to handle the less-than-car-lot business, but other manufacturers are accepting orders for less than car lots. In other trades handling industrial goods, the position of the distributor is also precarious. This was summed up by a statement in *Industrial Distributor and Salesman,* September, 1926, regarding the distributors of industrial products, which said: "Profits are not what they should be. Criticism is rampant. A hundred panaceas are being offered."

Not only are profits unsatisfactory in many wholesale trades, with the result that the service wholesalers are casting about for means of improving their position, but many manufacturers have a questioning attitude at the present time regarding wholesale distribution. There is probably no subject to which manufacturers are now giving more serious thought than that of the wholesale distribution of their products. The dissatisfaction which numerous manufacturers feel with conditions in wholesale trade is not so much with the costs of wholesale distribution, although there are question marks regarding that topic, as with the effectiveness with which the service wholesalers are functioning, as viewed from the manufacturers' standpoint.

II

That these conditions exist, there can be little difference of opinion. As to the causes for the unsettlement, many different views are found. The fact that this unsettlement is so widespread indicates, it is reasonable to infer, the existence of fundamental causes which go far deeper than many of the influences to which the unsatisfactory conditions frequently are attributed.

The first point to which attention is to be directed, therefore, in seeking the causes for this unsettlement in wholesale trade, is the radical changes in marketing methods which have been taking place during the last 25 years, and which are still going on. There are two groups of changes outside the wholesale trade which have affected the wholesalers. One group includes the conditions arising in manufacturing industries, the other, changes taking place in retail trade.

Manufacturers have been seeking not only to secure economy in distribution, but, even more, to obtain effective wholesale distribution, in order to assure stability of operations and stability of profits. In some industries the increase in the size of the manufacturing units has made possible the adoption of marketing methods that could not be employed when the factories

were small and poorly financed. An example of this is the hosiery industry. The increased scale of production has made it possible for some hosiery manufacturers to sell directly to retailers. The efforts of manufacturers to secure stability in their operations and stability of profits has been a factor of much greater consequence, however, and one which seems to be little understood.

When a manufacturer places a trade-mark on his product to identify it and undertakes to advertise the product to consumers, he is not seeking necessarily a higher profit per unit of output, but rather a stability in the demand for his product. He wishes to assure himself, if possible, of a regular, steady flow of goods from the factory to consumers, in order to effect economies in production, in order to provide regular employment for his workmen, and in order to avoid severe fluctuations in profits. The utilization of advertising for promoting the sale of trade-marked products arises, I think, more out of a desire for stability in operations and profits than from any other single cause. When a manufacturer puts a trade-mark on his goods, however, and advertises them to consumers, he is placing the service wholesaler, and perhaps the retailer, too, for that matter, in a position different from that which those merchants previously have held.

In order to promote sales of their products, furthermore, numerous manufacturers have employed missionary salesmen for soliciting orders from retailers to be delivered by wholesalers and, in some cases, have undertaken to make drop shipments to retailers. These methods of sales promotion have been adopted at heavy expense because of the difficulties that the manufacturers were experiencing in obtaining effective wholesale distribution. This is not the place to go into a discussion of the merits of the employment of missionary salesmen and of the practice of making drop shipments; for the purposes of discussing the topic in hand it is sufficient to note that these practices exist, and that they have a bearing on conditions in wholesale trade.

In retail trade some of the changes that have occurred already have been referred to, such as the increased number of chain stores, the activities of retailers' cooperative buying associations and buying syndicates. The large mail order companies have been increasing their sales, especially by opening retail stores, and they buy directly from manufacturers. The chief customers of the service wholesalers in most trades dealing in consumers' goods are unit stores. These unit stores have been vulnerable to chain store competition, and that situation has made the wholesalers equally vulnerable. Although there are numerous instances of well-managed unit stores, improvements in methods of management in unit stores in general have proceeded very slowly, and most wholesalers have rendered no real assistance to their customers on the problems of store management. Perhaps the wholesalers could not fairly have been expected to undertake to render such assistance. The facts are inescapable, nevertheless, that the ignorance of costs in so many unit stores and their uneconomical methods of stock control and of handling various other management problems gave the chain store companies opportunities for development which have rendered them serious competitors of the service wholesalers.

III

Within the wholesale trades themselves, finally, there have been certain

practices which have contributed to cause unsettlement. The demands of wholesalers for wider margins to enable them to earn satisfactory profits has tended to cause various manufacturers to question the value of the services which the service wholesalers were rendering them. When wholesalers have bought on a hand-to-mouth basis, the manufacturers have chafed at the practice. The failure of wholesalers to place advance orders has encouraged some manufacturers to take over functions which service wholesalers previously performed, and either to sell directly to retailers, or at least to reduce the margins which the wholesalers obtained. In the canned goods business and in the dry goods trade, for example, the failure of the wholesalers to place advance orders, as they were accustomed to do in earlier years, has led an increasing number of manufacturers to discuss, at least, the advisability of direct sales. The national wholesalers have found the competition of local wholesalers keen. The local wholesalers, on the other hand, have resented the action of some large national wholesalers in cutting prices on lines of merchandise on which they secure inside discounts from manufacturers because of the large volume of their purchases.

The competition between wholesalers themselves probably has contributed as much as any other single factor to the unsettlement in wholesale trade. In its efforts to increase its volume of sales or to prevent a decline in volume of sales, many a service wholesale firm has followed practices which have tended to increase its expenses and thereby to weaken its position for competing with other types of distributors. One example will suffice to illustrate this statement. The frequency with which wholesalers' salesmen call upon retailers has increased until in the large urban districts in several trades the wholesalers' salesmen call upon their customers daily. The result is a large number of small orders and heavy shipping expense, as well as heavy selling expense. Quite generally wholesalers have tended during the last 10 years to increase the frequency with which their salesmen call upon customers, even though in many cases that frequency is still less than once a day. Aside from the increased frequency of call, moreover, there also has been a tendency for each wholesale firm to send its salesmen to call upon every retailer who handles his class of merchandise, with the result that each retailer's orders oftentimes are split into such small amounts that the account is not profitable to most of the wholesale firms which share in the business. Each wholesaler is striving to increase or maintain his volume of sales, at the expense of other wholesalers. This competition between wholesalers obviously is conducive to price cutting as well as to an increase in the operating expenses of the wholesalers. Very likely much of this uneconomical competition between wholesalers is unavoidable, but even so the effect is to weaken the service wholesalers in their competition with chain stores and with the newer types of wholesalers.

The private brand problem has been becoming more and more acute. In practically every industry numerous wholesalers have sought to avert the effects of chain store competition, department store competition, and the competition of other wholesalers by putting out merchandise under their private brands. In doing so, they frequently have not recognized the fact that to make those brands successful it was necessary for them to incur heavier expenses than ordinarily were involved

in selling merchandise bearing manufacturers' brands. The wholesalers in some instances, moreover, have failed to maintain the quality of their private brands. From the standpoint of a manufacturer who is seeking to distribute merchandise under his own trademark, furthermore, a wholesaler who is merchandising goods under his private brand is not as satisfactory or effective a distributor as a wholesaler who does not have a special interest in particular brands. Those wholesalers, few in number, who have maintained the quality of the merchandise on which they have placed private brands and who have undertaken sound methods of promoting the sale of those brands, are on the road, consciously or unconsciously, to becoming manufacturers.

The private brand experiment of wholesalers, moreover, represents not only efforts to avert the competition of chain stores and other large retail organizations, but also an attempt to preserve characteristic trading operations. The old-line wholesaler typically was a trader. He performed a valuable service in seeking out sources of supply of dependable goods at reasonable prices. As more and more manufacturers have trade-marked their goods and advertised them to consumers, the services called for from the wholesaler have become less of a trading character and more of a distributing nature. The significance of this change in conditions has not yet been recognized by a large number of service wholesalers. They wish to be able to give or withhold their patronage to individual manufacturers, as they could do when merchandise generally was unbranded. It is to prevent precisely the irregularity resulting from such trading activities on the part of wholesalers that many manufacturers have undertaken to trade-mark and advertise their products to consumers, with the purpose of attaining a greater degree of stability in their operations.

As a distributor, a service wholesaler needs to utilize careful methods of stock control. Until within the last 15 years, very few wholesalers had any systematic method of controlling stocks beyond the personal watchfulness of the buyer or the chief stock clerk. Recently numerous wholesalers have introduced methods of one sort or another for stock control, but usually they are still rather crude.

IV

In order to enhance their profits, it will be necessary for wholesalers to reduce their operating expenses rather than to demand a wider margin from manufacturers, since any increase in the cost of wholesale distribution is playing directly into the hands of chain store competitors. That opportunities for economy in management exist in most wholesale businesses will be agreed, I think, by anyone who is intimately familiar with the conditions in wholesale trade and who approaches the subject with an unbiased view. These opportunities for improvement in management relate not only to methods of stock control, but also to sales management, in order to secure a greater volume of sales per salesman, for example.

A specific instance of the opportunities for securing economy is afforded by the case of a wholesale drug company which made an analysis of the cost of delivering merchandise to each of 62 customers in a suburban district.[3] This was only one small group of the company's customers. The analysis covered a five-month period in 1922 and 1923.

[3] *Harvard Business Reports*, Vol. III, pp. 256-268.

This analysis showed that for about one-third of the customers the average size of the orders received was too small to permit delivery to be made at a profit. In an extreme case, in one month eight deliveries were made to a customer with an average sale per delivery of $1.66, on which the delivery cost amounted to 18% of the value of the merchandise. In another even more extreme case, the deliveries to a particular customer in one month cost 28.8% of the sales. This analysis indicated that, unless the customers who were buying in such small quantities were willing to place larger orders with this wholesaler, it was not worth while for the wholesaler to continue to solicit their orders. Another case is that of a wholesaler who made an analysis of the purchases made by his customers and of the cost of securing the orders, with the result that he reduced materially the size of the territory covered by his salesmen. The outcome was a substantial increase in net profit. Such analyses as these, however, rarely are being made by wholesalers.

The service wholesalers have constituted in the past a particularly noteworthy group of successful business enterprises. The individual wholesalers have enjoyed an enviable reputation for integrity and square dealing. For many years they performed essential services economically. The existing unsettlement in wholesale trade, moreover, is not the result of the failure of wholesalers to maintain their earlier standards of service; the unsettlement rather has been caused by widespread changes in distribution, beyond the control of the wholesalers, to which they have had difficulty in adjusting their operations. Here and there instances are found of service wholesale firms that have succeeded well in meeting the new conditions, but such firms are in the minority.

It is hazardous to venture an opinion as to the means by which more settled conditions will be secured for wholesale trade. There are a few definite premises, however, on which it seems we can secure fairly general agreement. The first is that the trade-marking of merchandise by manufacturers and advertising to consumers is likely to increase rather than to diminish; second, that manufacturers will give increasing attention to methods of obtaining orderly distribution for their products so that they may be assured of orderly production. In the third place, as the disadvantages and unfairness of a varying price policy become more and more generally recognized, there will be less opportunity for wholesalers to trade on price. This means that a wholesaler must become more largely a distributor than a trader.

The wholesale function must be performed, but the wholesale merchant is not in a position to dictate how it is to be performed. He is a middleman and must serve the interests of manufacturers and the interests of retailers. He must accommodate himself to the changes in conditions. Whether the wholesale function continues to be carried on extensively by independent service wholesalers or is to be performed by new types of wholesalers, by manufacturers operating wholesale branches, or by chain store companies through their warehouses and by department stores in their field, depends upon how economically and how effectively the service wholesalers can function as distributors, and also upon how economically and effectively the unit stores function in the trades in which they predominate. A fundamental struggle is under way, in which many wholesalers still are dodging the real issue.

THE SIGNIFICANCE OF RATIONALIZATION

By OLIVER SHELDON

IF ANYONE shall well consider the errors and obscurity, the mistakes and confusion that are spread in the world by an ill use of words, he will find some reason to doubt whether language, as it has been employed, has contributed more to the improvement or hindrance of knowledge among mankind. So wrote the philosopher, John Locke, in the seventeenth century. Had he written in the twentieth, he might well have expressed his thought more emphatically.

The above quotation springs to the mind in any consideration of industrial nomenclature. The term *rationalization,* which has rapidly found, at any rate in Europe, a ready acceptance, and has already been adapted to a hundred different uses, follows in the train of our existing terminology. The stage is being set once again for protagonists who "on the points on which they are precise are not agreed, and on the points on which they are agreed are not precise."

Rationalization, perhaps, falls into the latter category. Though the word heads the press contributions of eminent industrialists and glows in the reports of scholarly conferences, there has yet to appear any consensus of opinion as to what the belauded stranger in truth expresses. It has been seized upon for service in many good causes, extolled as an industrial panacea, and given a back broad enough to carry the burdens of a whole generation. But the exact significance of the word is lost in a jungle of ideas. Ben Johnson wrote well, "A man coins not a new word without some peril."

One cannot, however, with reason resist the creation of new words to describe new conditions, feelings, materials, or activities. Neither can industrial management, already guilty of a verbal infelicity such as "functionalization," logically repel the entry into its common parlance of an expression at least its compeer, provided the new candidate brings fruit to the harvest. But surely it would be well, before the certificate of professional approval be awarded, to substantiate the claim of one writer, "that it fills a definite void in economic nomenclature."

This writer's definition of rationalization runs, "It comprises all movements which aim at overthrowing existing inefficient practices and out-of-date methods in productive industry and commercial activity. . . . Rationalization, correctly defined, implies the reorganization of an industry as a whole. . . . Rationalization is the gospel of the 'one best way' applied to every industrial and commercial activity."[1]

Sir Alfred Mond, chairman of Imperial Chemical Industries, Limited, with a note of apology, suggests, "one definition, perhaps too wide and general, is that rationalization is the full application of science and scientific methods to industry, secured by unification of all the processes of production and distribution."[2] The Honorable David Houston, in a memorandum submitted to the Preparatory Committee for the Inter-

[1] R. H. L. Lee, M.A., A.M.I.C.E., A.I.M.M., in *System* (British), September, 1927.

[2] In *The Manchester Guardian,* Supplement on *Industrial Relations,* November 30, 1927.

national Economic Conference, 1926, writes, "The term rationalization, as used in Europe today, includes, I take it, the three elements of stabilization, standardization, and simplification of industry or of individual enterprises." The final report of the World Economic Conference, May, 1927, speaks of rationalization, "by which we understand the methods of technique and of organization designed to secure the minimum waste of either effort or material. It includes the scientific organization of labor, standardization both of material and of products, simplification of processes, and improvements in the system of transport and marketing." Professor D. H. Macgregor in his address to the British Association, 1927, confines his definition to a narrower sphere when he describes rationalization as "the right organization of an industry considered as a type of government, the producers being so related as to enable such policies to be applied as works specialization, nondestructive elimination of the weak, and the control over the entrance of new establishments." Sir Alfred Mond has, apparently, something of the same thought in mind when he refers to "the grouping together on a national and sometimes international basis of great industries into horizontal combines" as "one of the most important phases of what is widely known, and still more widely misunderstood, as rationalization." In another valuable article, Sir Alfred quotes[3] two further definitions, one of which at least gives a more concrete picture than those already quoted. The one reads that rationalization is "the grouping together of industry into larger and larger units, with the object of adjusting the means of production to the probable means of consumption, and so to regulate prices that there should be a level path along which trade and commerce can move." The other reads, "Organize their technique, perfect and unify conditions of production, use the various establishments, factories, and workshops for the manufactures for which they are best suited; economize staff, standardize products."

I make no apology for proffering this formidable and varied list of definitions. At the worst, they portray a discursive, rambling state of mind; at the best, they represent a widespread groping, by devious paths, around and about a fundamental truth. If the sum of these definitions leaves any clear-cut impression, it is that of many eager minds, active and practical, seeking a focal point which shall bring together every scheme and project for the advancement of industrial efficiency. It is no belittling of this effort, but rather a furthering of its object, to endeavor to give the chosen word a compact, specific, and finite significance.

At the same time, one cannot but stand a trifle dismayed at the generality and comprehensiveness with which the word itself and the movement it represents are credited. In the terms of some, it would appear to cover all that we have normally understood by such words as "efficiency," "scientific management," "simplification," "integration," and "combination." Maybe, one can reply, "that which we call a rose by any other name would smell as sweet," but those of us who dream of a "science" of management, codifying all the available knowledge of management methods and forming the basis of a "profession" of management, cannot, I think, rest content to see precision of thought and expression sacrificed to waves of enthusiasm. The two must be encouraged to march together.

[3] In *System* (British), October, 1927.

I

If rationalization is a movement to preach and attain the overthrow of "existing inefficient practices and out-of-date methods"; if it be "the gospel of the 'one best way' applied to every industrial and commercial activity"; if it be the "full application of science and scientific methods to industry"; if it be "the three elements of stabilization, standardization, and simplification"; if its object be to "secure the minimum waste of either effort or material" . . . if this be rationalization, then one can emphatically claim that the word is synonymous with what we have always known as "scientific management." That it is so in the minds of many is evident in their writings. The two terms are used as being interchangeable. If, then, "rationalization" is indeed "scientific management," there can be little cause for regret that, under its new title, the movement has won a degree of popularity and thoughtful consideration which it lacked previously. The regret must be that the whole movement should run the risk of being befogged by its nomenclature, and, further, that those who have been the pioneers should, because they bore a different-hued banner, be forgotten. Scientific management has always stood for that form of management, in whatever branch of industry and commerce, which conducted its activities by the use of science and the scientific method, which rejected tradition and opinion where facts, scientifically ascertained and verified, pointed another way, and which fought a war upon waste in every form, as representing conditions where scientific methods had not been adequately applied. Scientific management has established standardization—of methods, of products, of materials—as a weapon in its armory; it has fathered simplification, as being the outcome of scientific investigation; it has championed high wages and high output, as being the outward symbol of its activities, properly conducted; it has promoted industrial peace, since it aims to cleanse industry of arbitrary rule and individual judgment in favor of scientifically discovered and universally open laws or principles. Rationalization, in the sense in which the word is used by some, can aim to do no more.

A thought runs through some of the definitions quoted above, however, and is apparent in much that is said and written on the subject which is new to scientific management, and represents an extension of its scope to cover circumstances born of this generation of industry. "Rationalization," says Mr. R. H. Lee, "implies the reorganization of an industry as a whole." Sir Alfred Mond speaks of "unification of all the processes of production and distribution," and of "the grouping together of great industries into horizontal combines," and of the "grouping together of industry into larger and larger units," with the objects of stabilization, standardization, and simplification. Professor Macgregor defines the term as "the right organization of an industry considered as a type of government." The thought here is of something not applicable to the individual business, something which should govern the growth and may occasion the composition of amalgamations of businesses.

II

The structure of industry has passed through several phases—the early domestic system, the smoldering beginnings of the factory system, the bristling "small-scale" industry of the first half

of the nineteenth century, the massive "large-scale" industrial order of the second half. Today we are ministering to the birth of a new phase in the destiny of industry—a phase which thus early bears the mark of becoming the dominant form of organization in the present century. Industry is tending to group itself into larger and still larger units, not so much by the growth of individual concerns—the main feature of "large-scale" industry—as by the amalgamation of existing concerns and of groups of businesses. "Both in industry and in public and economic thought," writes Sir Alfred Mond, "the creation of greater economic units, both nationally and internationally—and, I would add, imperially—expands and persists. It is little use criticizing this tendency. It is something which is happening and which is bound to continue." . . . . "The old fetish of individualism still exists in the minds of many of our manufacturers, and the new ideal of combination and unity is but slowly being translated into actual practice. . . . . In this transition stage of the new organization of industry into rational units, the first essential is the unification of industries on a national basis."

Great amalgamations of firms, however, both nationally and internationally, are no new phenomenon. Economists have traced the growth of such combines and have reviewed at length their economic causes and consequences. They have divided amalgamations into two classes—the *horizontal* and the *vertical* amalgamation. The "vertical" type is brought about by the process known as "integration," which Professor W. J. Ashley defines as "the bringing together under a single business control of a whole series of operations contributing to a final result which had previously been conducted entirely apart." The "horizontal" amalgamation, similarly, is the outcome of the process known as "combination," that is, the linking together of several enterprises engaged competitively in the same trade.

If rationalization, therefore, simply implies a process of amalgamation, it is not a new process, nor is an additional title necessary to describe it. "The grouping together on a national and sometimes international basis of great industries into horizontal combines" would serve well enough to define what economists have hitherto described as combination. It only confuses what, in view of its magnitude, should be kept a perfectly clear issue to adorn a single industrial process with two synonymous titles.

Yet, even now, we have not sketched the entire picture. In my conception of its meaning, rationalization differs fundamentally from combination. Amalgamation is indeed a prerequisite of rationalization, but it is not its whole content, whereas combination is, in itself, without further qualification or addendum, amalgamation of a particular type. The distinction between the two arises in the *object* with which the amalgamation is planned. Combination, in the past, has been adopted for many reasons—family association, the impulse to look for greater security and stability, the crushing of competition, the regulation of prices. It has come about more or less fortuitously; there have been wide variations in the degree of union; more than a small portion of a total industry has rarely been covered. There has been little reasoned purpose behind the development such as would justify every industry pursuing the same course for the sake of that purpose.

Rationalization, on the other hand, is combination on a definite plan—a series of steps in industrial organization,

with explicit objects, to be recommended because of those objects. The act of combination, in itself, may or may not offer advantages; it may be simply a convenience, a piece of personal aggrandizement, a source of pecuniary advantage to particular individuals. Rationalization, on the other hand, is combination for the sake of what combination makes possible, for the sake of the policies which can be pursued by a unified industry—policies advantageous not only to the various classes and grades of producers and distributors, but also to consumers and the whole community. Whereas, then, combination is an act whose object is immaterial, rationalization is an act of which the object is only that which is material.

III

Perhaps, then, one may venture, in all diffidence, to suggest a formal definition of rationalization to embody these thoughts. It might read thus:

"Rationalization is the process of associating together individual undertakings or groups of firms in a close form of amalgamation, and, ultimately, of unifying, in some practicable degree of combination, whole industries, both nationally and internationally; with the allied objects (beyond what is possible to an industry divided into many competitive units) of increasing efficiency, lowering costs, improving conditions of labor, promoting industrial cooperation and reducing the wastes of competition. These objects being achieved by various means which unification alone makes in full measure available—the regulation of the production of an industry to balance the consumption of its products; the control of prices; the logical allocation of work to individual factories; the stabilization of employment and regularization of wages; the standardization of materials, methods and products; the simplification of the ranges of goods produced; the economical organization of distribution; the adoption of scientific methods and knowledge in the management and technique of trades as a whole; and the planning and pursuit of common trade policies."

Or, to use the terms already employed in this discussion, rationalization is that form of industrial combination which is undertaken with the object of widening the scope for the application of scientific management to the extent of whole industries, and achieving the benefits to producers, consumers, and the community which scientific management conducted on this scale alone can provide. In a word, rationalization is not combination, nor is it scientific management; it is, rather, a form of the one with the object of the fullest extension of the other.

We are in an age of major transition; the scaffolding of fresh renovation is being erected around the structure of industry. We cannot yet tell what the design may be. Yet it is clear enough that the dominant economic unit of the future is to be larger and wider in scope even than those to which we are only now becoming accustomed. In this, there are advantages to be seen; there are disadvantages also. Problems of a new order will arise; a higher standard of managerial and directorial skill and ability will be demanded to control the destinies and govern the activities of these larger units. Greater complexity of organization is inevitable, requiring a far more acute "organization sense" in those who work within it than is discernible today. Fuller cooperation with labor, and vision, both by the managements and the leaders of labor, will be essential to tide over the adjustments in employment which cannot but accompany the process of unification. The interests of consumers will need to receive adequate protection and may even come to be represented in the counsels of industry. A larger degree of state partic-

ipation in and regularization of industrial affairs may well ensue.

Industry moves on its way; the path that is now opening up discloses a sunlit horizon, if only our skill, our cooperation, our courage, and our integrity will suffice to bring us to it. It will require all of these, for big projects demand big qualities in men. Rationalization is the name with which men have chosen to crystallize their thought on this task; it is no petty precaution to give the word a precise significance, both for our own sakes and for the sake of those who later will come to review our beginnings and consummate our dreams.

PRODUCERS' GROWTH CURVES IN AN EXPANDING INDUSTRY

By RALPH C. EPSTEIN

BETWEEN the beginning of 1903 and the end of 1926, 181 firms engaged in the manufacture of passenger automobiles in this country upon a commercial scale.[1] Of 181 companies, 66 remained in business 10 years or more. For 53 of these companies, production data have been collected in complete enough series to plot their life histories. It is with the growth curves of these 53 firms that this article[2] is concerned.

Although the present study treats of individual producers' histories, no individual production figures will be presented in either the text or the charts which follow. All of the charts are drawn to the same relative scales, and all of the vertical scales are logarithmic. Accurate comparisons of percentage increases or decreases may, therefore, be made between any two or more of the curves in the various charts which follow, even though neither lines nor any quantities along the vertical axes are shown.

[1] This figure is based upon studies by the present writer which are described in his book, *The Automobile Industry: Its Economic and Commercial Development* (A. W. Shaw Company, 1928). In brief, by production upon a commercial scale I mean the actual fabrication of cars over a period of more than a month or two, not the assembly of a few vehicles and their sale chiefly to a company's stockholders and dealers. See, for a fuller explanation, pp. 163-4 and p. 347 of that book.

[2] For their cooperation during its preparation I am indebted to Miss Florence M. Clark, secretary of the University of Buffalo's Bureau of Business and Social Research, Mr. Alfred Reeves, general manager, and Mr. Oscar P. Pearson, statistician, of the National Automobile Chamber of Commerce.

1. The General Curve for Companies in Business Ten Years or Longer

The combined production of these 53 concerns which remained in the business ten years or more, together with the total passenger car production for the industry as a whole, is given in Table I.

It is thus seen that in most years the business of the firms included in this study represented a considerable proportion of the industry's output, in 1926, 87%. For the whole period, the total output of the 53 firms amounted

TABLE I. COMBINED PRODUCTION OF 53 CONCERNS AND TOTAL PASSENGER CAR PRODUCTION, 1903-1926

Year	Total Number of Cars Produced by the 53 Firms (*000 omitted*)	By the Entire Industry (*000 omitted*)	Percentage Produced by the 53 Firms
1903	4	11	37
1904	6	22	29
1905	12	25	48
1906	16	34	47
1907	25	43	58
1908	28	64	45
1909	66	128	51
1910	105	181	58
1911	120	199	60
1912	198	356	56
1913	335	462	72
1914	439	544	81
1915	712	896	80
1916	1,186	1,526	78
1917	1,503	1,741	86
1918	817	943	86
1919	1,413	1,658	85
1920	1,684	1,906	88
1921	1,308	1,514	86
1922	2,094	2,406	87
1923	3,196	3,694	86
1924	3,862	3,243	88
1925	3,322	3,849	87
1926	3,432	3,937	87

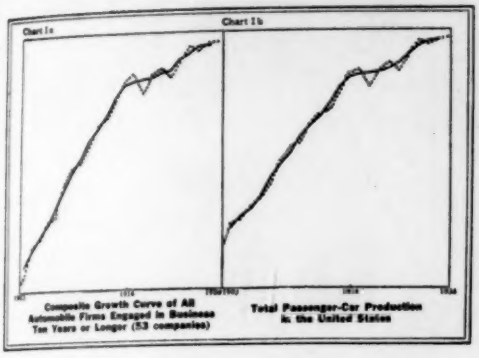


Chart Ia
Chart Ib
Composite Growth Curve of All Automobile Firms Engaged in Business Ten Years or Longer (53 companies)
Total Passenger-Car Production in the United States

to 85% of the total output of the industry.[3] (This figure is not, of course, an average of annual percentages, but a weighted figure for the entire period.)

The composite production curve for these 53 firms over the period 1903-1926 is shown in Chart I*a*. It shows a great but steady expansion averaging 58% per year from 1903 through 1916, then evidences a tapering off in the rate of increase. The average yearly increase during the tapering off period, from 1917 through 1926, is 18%. In this, as in the other charts here presented, the dotted curve represents actual data, while the solid curve represents a three-year centered moving average.

In Chart I*b* is shown, for comparison, the curve for the entire industry over the same period. Its rate of increase averages 49% for the period ending in 1916, and 17% for the later years. Obviously, the shorter-lived companies included in this curve, but not included among our 53 "ten-year or more" firms, serve to cut down the rate of increase during the period prior to 1917.

[3] It should be noted that in Table I, as well as in the charts which follow, the figures given, or the points plotted for each curve, do not necessarily represent the output of as many different firms in *every* year as are said to make up the curve for the whole period, for sometimes when the period covered by a chart is greater than 10 years, not every firm that is included in the curve remained in business over the entire time.

2. *Comparison of Companies Still in Business with Those Out of Business*

We may now begin to break down this total curve of the 53 companies in two different ways. First, the firms still in business in 1926 may be separated from the firms which went out of business before that year; secondly, single curves for individual firms may be drawn and classified according to type.

Take the first comparison of the growth curve for the firms still in business with that for those which have departed. Charts II*a* and II*b* tell the story. The one curve, Chart II*a*, evidences an expansion that is almost identical in contour and slope with Chart I*a*, even though but 28 firms instead of 53 are included. The other curve, Chart II*b*, which represents the 25 firms which failed[4], presents a very different picture. It rises from 1903 to 1916 irregularly, then averages a more or less dead level until about 1920 or 1921, and finally drops more precipitately than it originally rose. Here indeed is a rise and fall of firms. Twenty-

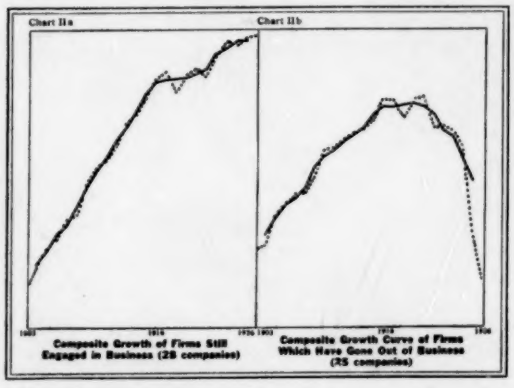


Chart IIa
Chart IIb
Composite Growth of Firms Still Engaged in Business (28 companies)
Composite Growth Curve of Firms Which Have Gone Out of Business (25 companies)

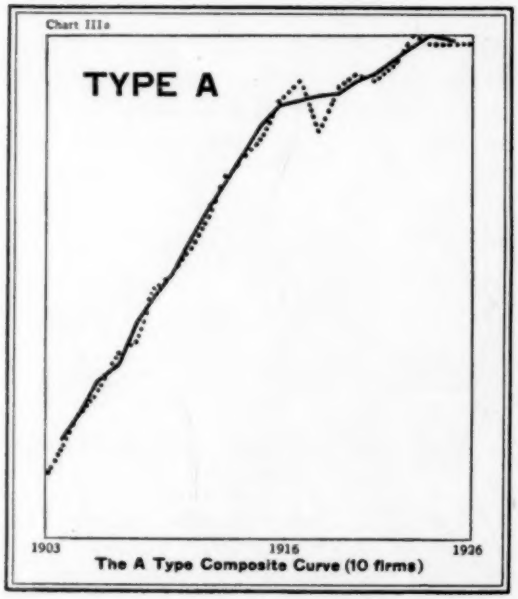
[4] The word "failed" is here used merely in the sense of having withdrawn from business, although in many instances, of course, technical failure in the sense of insolvency was involved also.

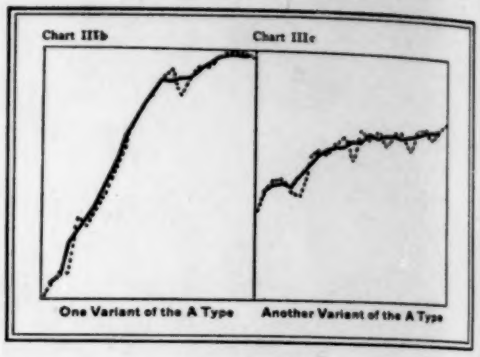
five enterprises, to repeat, are included in Chart II*b*, or nearly half the total number of firms which were engaged in manufacture for 10 years or more.

3. *Types of Individual Curves for Firms Still in Business: Type A*

The individual series of production data for each of the 28 firms making up Chart II*a* were plotted separately, and the resulting curves were then classified according to the general types which they exhibited. If a unique curve, greatly unlike more than perhaps one other of the 28 curves, appeared then it was classified as "Miscellaneous." Five such "Miscellaneous" curves were present. The remaining 23 could quite readily be grouped into three general types. These three types we may designate as being of the A, B, or C type, respectively.

There are 10 curves of the A type. Chart III*a* summarizes them; it represents the composite or total curve for the group. Not all of the 10 curves approach Curve III*a* very closely in their slopes, but all have approximately the same contour, although there is some variation as to the period in which the "tapering off" portion of the curve is found. Charts III*b* and III*c* represent the two individual curves which depart in the greatest degree, in either direction, from the slope of the composite curve.



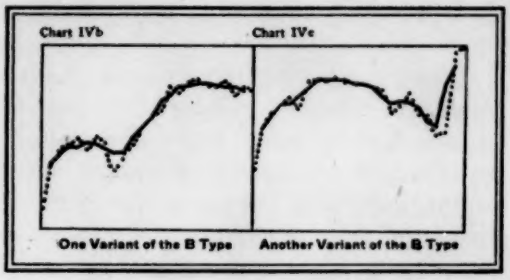


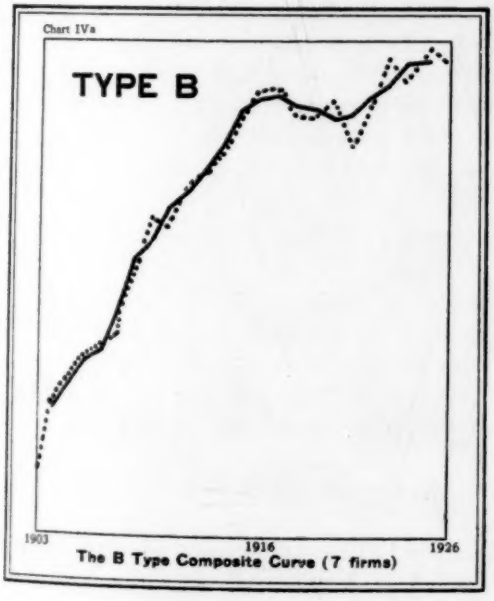
Curve III*a*, it will be noted, closely approaches both Curve I*a* (the 53 firms together) and Curve I*b* (the general curve for the industry) in both contour and slope. Its trend is straight up, at an average rate of 59% a year, until after 1916; then it tapers off and for the period 1916-1926 averages an annual increase of but 17% per year, the last three years of the period showing virtually no increase at all. The contour of Curve III*a* during these few latest years is due largely to the fact that the Ford Motor Company is one of the 10 producers whose figures compose the curve.

Curve III*b*, the extreme example of startling slope among the curves of the A type, shows an almost straight-line increase of 91% per year from 1903 through 1916. From 1917 through 1926, the rate of this firm's expansion, like that of other successful automotive firms, tapers off, although its growth from 1917 through 1924 averages 29%

yearly. Curve III*c*, the extreme example of slow growth in curves of the A type, averages a 37% annual increase through 1916, then a 13% yearly increase through 1926.

It cannot be said that these ten companies, the growth curves for which are of the A type, represent any particular kind of firm, predominantly, as regards absolute size, the type of car manufactured, the period over which they have been engaged in business, their location, or their individual histories. Three of the ten have grown to be very large firms, if for purposes of this definition we designate a production of 50,000 cars or more in 1926. Three of them are medium-sized firms, if this category be taken to mean a production of between 20,000 and 49,999 cars a year; while the remaining three are small companies, in the sense of now annually producing less than 20,000 cars each. Three of them, throughout most of their history, have made low-priced cars, cars selling at around $1,000 or less. Four have made medium-priced cars principally, cars retailing either between $1,000 and $1,300 or $2,200 and $2,500; while the other three have specialized in high-priced cars. About half of them have been in business over the whole period shown in Chart III*a*, while the other half have entered as late as the middle of that period. Six of the ten firms are located in Detroit, while four are established elsewhere than in Michigan—in either Ohio or Indiana. In general, their individual histories seem not to be strikingly different than those of most motor car producers. Since their growth curves approximate in contour the generalized curve for the industry, this might, however, be expected. Let us turn then to other types of curve: types which deviate substantially in slope and contour from the curve which we have termed type A.





4. *Firms Still in Business: Type B*

Seven companies, all still in business, have growth curves which we may term the B type, the composite curve for which is shown in Chart IV*a*. The B type differs from the A type in that after an initially rapid rate of growth, there comes not merely a slowing down or a "tapering off" in the rate of increase, but an absolute falling off in production; this is followed, however, by a rising trend, the rate and dura-

tion of which vary with the individual case.

In the composite curve shown (Chart IV*a*), the absolute falling off is seen to occur between 1916 and 1920. This, however, is not characteristic of most of the individual curves of the B type; although they resemble the composite B curve in their contour, the period in which the drop takes place varies. In several cases it occurs between about 1909 and 1915. In both of these instances, the firms had made relatively high-priced cars; after the drop, they recaptured their prestige by producing low- or medium-priced vehicles. In those cases where the drop came during the period in which it is seen on the composite curve (1917-1920) it is doubtless due principally to a wholly fortuitous cause: the partial interruption of passenger car production in these plants because of the war. In only one instance did the drop in secular growth follow the crisis of 1920. It should be born in mind that we are now classifying the curves of just those producers who remained in business through 1926. Other firms were, of course, disastrously affected by the events of 1920-1921, but they either recovered by 1922 or 1923, or else went out of business by 1924 or 1925. In other words, only one firm which felt the effects of the cyclical upset of 1920-1921 for longer than a year or two ever saw its production mount again; recovery either was rapid or else was never realized.

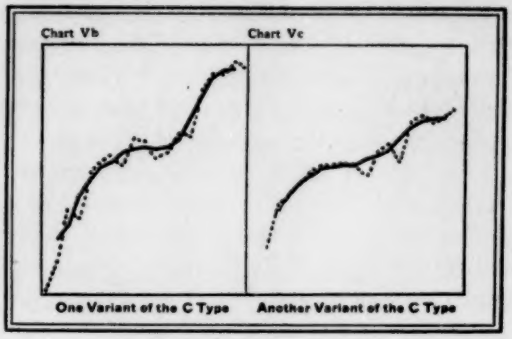
Charts IV*b* and IV*c* show interesting individual variants from the composite B curve. Curve IV*b* exhibits a relatively brief period of absolute decline, while Curve IV*c* shows a declining trend that extends over more than half of the entire period under consideration. The sharp recovery following 1923-1924 is the result both of new management and the introduction of a new line of cars. Like so many other developments of both major and minor character in the automobile industry, such a sharp recovery after so long a decline would hardly seem possible. It is, of course, a highly exceptional case; as such, however, it lends weight to the importance of individual management as a factor in business success. It may seem hardly proper to classify Curve IV*c* as a type B curve because of the extreme amplitude of the downswing and the relatively brief period that has elapsed since the generation of the upswing; in that case it may be regarded merely as a unique or miscellaneous type of growth.

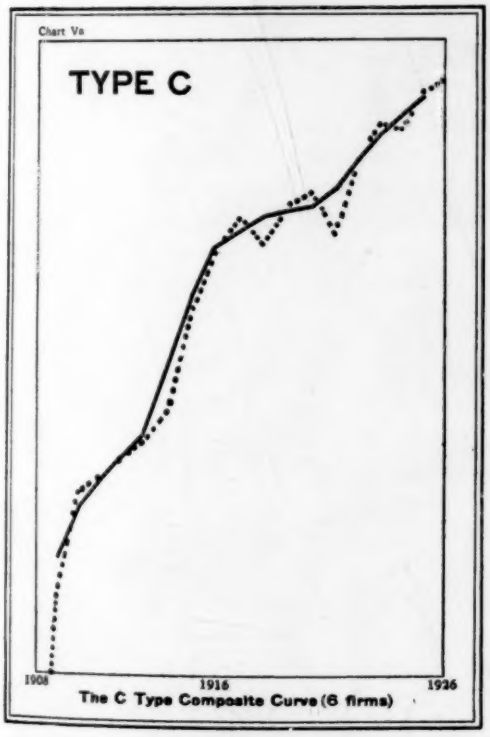
In general, the curves of the B type, unlike those of the A type, represent relatively small firms. Only one of them in 1926 made more than 15,000 cars. Nor were more than two of them ever large enterprises at any times in their history. This may be because the absolute declines in volume constituted such serious "set-backs" in the growths of these firms that they were never able to realize the productions which might otherwise have eventually been attained; or, it may be that the firms encountered such "setbacks" principally because they were small. In some instances the one explanation seems sound; in other cases, the reverse; no very definite general statement is at present possible. Here, as often is true, to determine the comparative importance of factors of this sort requires qualitative as well as quantitative analysis; the most specific details of industrial history are needed to supplement mere statistical investigation.

5. *Firms Still in Business: Type C*

The third type of growth curve, which we may call type C, does not

taper off so greatly as does type A after 1916, but on the other hand does not exhibit an entirely straight-line growth prior to 1916. Nowhere, throughout its course, however, does there occur an absolute falling off. For the period as a whole, it approaches a straight line more than any other of the three general types of curve; indeed, to several of the individual curves which make it up, straight lines could well be fitted. There seem to be cycles present when one observes the several changes in the rates of growth represented by Curve V*a*; but since it is merely a general curve from which the six individual curves which compose it vary considerably (they vary as regards the periods which they cover), the analysis of such cycles would, for purposes of the present discussion, have no more than a mathematical significance. Two individual variants from the general curve are shown in Charts V*b* and V*c*, respectively.





None of the six producers whose growth curves are of the C type engaged in business before 1908; they are thus second-generation concerns in the sense of not dating back to the beginning of the industry. Four of them are very large; their annual production is now 100,000 cars a year or more.

A fifth is quite large; its production is nearly 50,000 cars. Only one is a small firm, with an annual output of something less than 20,000 units. Although not pioneer firms, five of the six (the five largest ones, it is of interest to note) were started by men who had previously had a wide experience in automotive manufacture.[5]

The growth curves of these second generation firms, piloted by men of experience, suggest an inference which may or may not be valid. This is that, largely because of the fact that these men had new enterprises with which to start, in which the lines of policy were yet undetermined, they were often able more effectively to grapple with changing market and manufacturing conditions than were men of equally great ex-

[5] See what is said in the April, 1927, number of this Review, p. 288, in an article by the present writer, "Leadership in the Automobile Industry, 1903-1924."

perience but who were shackled to somewhat settled, older established firms. The type C growth curve for these second generation firms never shows an absolute decline throughout the course of its trend;[6] in other words, although external market conditions at times slowed down the rate of their expansion, these producers never failed to take sufficiently good advantage of their opportunities to avoid an absolute "setback."

It should be added that only one of the six has ever made even a moderately high-priced model. Two of them have made low-priced cars, while the other three have made medium-priced cars, or low- and medium-priced cars simultaneously. Even the one which once made a moderately high-priced product did so only for a few years, and during that time it also manufactured a medium-priced model, the sales of which constituted by far the principal part of its volume.

The fact that soon after the rate of growth for any one of these producers begins to taper off, the curve again begins to straighten, connotes a flexibility of policy that probably is the chief explanation of the concern's success. When large cars came rapidly to be less desired, relatively, these firms began to make lighter ones; when the presence of more paved roads and the growing popularity of country touring caused the public to demand cars capable of making greater speed and longer distances, at lower operating expense, most of these firms supplied them; and when, a little later, the public's preference for six-cylinder cars in the medium-priced field began to be apparent, the three of these six firms which at that time catered to this field immediately discontinued their "fours" and brought out "sixes." More recently, two of the four producers who have of late years catered to the upper-medium-priced field have brought out "straight eights." Even though the fact of the "straight eight's" final ascendancy in the upper-medium-priced field is not as yet finally demonstrated, the flexibility of policy that this action suggests is unmistakable. In none of the six instances under discussion can this flexibility of policy be said to have constituted vacillation; indeed in several cases one general policy has been continued for some years, so long as in general it showed no signs of becoming obsolete. But in most instances, as soon as such signs were at hand, changes were made.

6. *Firms Still in Business: Miscellaneous Types*

Of the 28 "ten-year-or-more" firms which are still in business, 23 have growth curves of either the A, B, or C type. The remaining five curves do not bear a sufficient resemblance to any of the three chief types to be classified with them, nor do any more than two of them at all resemble each other; they may accordingly be designated as "Miscellaneous."

Two have the contour of a straight-line, or compound interest, curve throughout either a little more or a little less than half of their course; then they flatten out and remain upon almost a dead level for several years, and finally begin to dip slightly. These two firms may join the "Out of Business firms" in time, although it is too early yet to tell. Two more of the "Miscellaneous" curves evidence a parabolic rise for some years, then decline—one precipitously, the other less abruptly.

[6] Except for one producer whose decline in production occurs during the war period, when special factors may readily have accounted for the brief absolute decline.

TABLE II. DISTRIBUTION OF 28 GROWTH CURVES ACCORDING TO TYPE—FIRMS OF TEN YEARS' LIFE OR LONGER, STILL ENGAGED IN BUSINESS

	Type A	Type B	Type C	Misc.
Number of curves	10	7	6	5
Percentage of total number	35.7%	25.0%	21.4%	17.9%
Number starting in business before 1908	5	3	0	2
Number starting in business in 1908 or later	5	4	6	3

The precipitous decline is, however, explained by special factors; this firm has of late years concentrated its energies upon the production of other types of vehicles than passenger cars. The fifth "Miscellaneous" curve is the most interesting of all. It exhibits a straight-line rate of increase for some years, then runs along at a dead level for about a decade, and of late years has risen sharply. Like one of the type B curves discussed earlier, the company here represented saw a change in management during the more recent period of its history. All five of these Miscellaneous curves, it should be remarked, represent small companies.

7. *Summary and Conclusion*

The present paper has established the following facts, briefly reviewed. If the production figures of those firms which are now engaged in the passenger automobile industry, and have been so engaged for ten years or more, are plotted upon semi-logarithmic paper, three general types of curve are found. Type A is the curve more or less corresponding to the curve of total production for the industry as a whole: a straight-line growth through 1916, then a parabolic[8] tapering off. This curve is not characteristic of one particular size or type of enterprise any more than another. Type B shows also a straight-line growth throughout the first part of its course, then shows some absolute decline, followed by recovery, although at a lesser rate than the original increase. With but a single exception, this curve is found only for relatively small companies. Finally, type C is a curve representing a long, sharply climbing spiral, exhibiting several variations in the rate of increase, but no drop nor level whatever. It is characteristic of very large concerns, all of them "second-generation" companies. Unlike type C, however, neither type A nor type B is found to be more characteristic for one part than for any other part of the period 1903-1926. Table II summarizes this statement.

All this, of course, tells only half the story of individual producers' growth curves in an expanding industry. The other half of the analysis is concerned with the curves of those producers who have fallen by the wayside. It will be presented in the next article.

[8]This adjective is used merely as a description of the existing curve thus far, not at all with the mathematical implication that a curve representing a parabola eventually must possess a negative inclination.

AN INDEX OF THE INSTALLATION OF MACHINERY IN THE UNITED STATES SINCE 1850

By CARROLL R. DAUGHERTY

MEN engaged in the so-called "natural" sciences have frequently expressed doubt as to whether or not the "social" fields of learning deserve the name of "sciences." They have declared that economics and sociology, for example, are made up of principles and conclusions arrived at largely by a process of deductive thinking and not based, as are, say, astronomy and chemistry, on thorough investigation of all available facts.

Students interested in sociology and economics, however, have themselves for some time felt the need of being more "scientific." They have realized the value of the inductive method, and for a number of years have labored at the collection and classification of all manner of statistical information which would form the basis for justifiable generalization. In this way old principles and hypotheses might be tested and new laws perhaps formulated.

In the field of economics it is well known that there is an increasing amount of data available. Governmental and private agencies are continually enlarging the scope of their surveys, and there are statistics in almost all lines of industrial and commercial activity—statistics of prices, wage rates, production, ton miles of freight, and so on—all of which contribute to the raw material of inductive economics.

It is the purpose of this article to summarize the results of a study carried on for the past three years into the amount of horsepower equipment installed in the United States from 1849 to 1923. The total amount of horsepower capacity of prime movers in all fields of productive activity would be, it was felt, an adequate index of the varying amounts of machinery installed over a period of time. It was recognized, of course, that certain elements, such as improvements in the technique of production, better organization, elimination of waste, and so on, might increase the amount of machinery which could be operated by a given installation of horsepower equipment, but it was believed that they were not of enough weight to invalidate the results; they would rather make for deviation on the side of conservatism.

A moment's consideration will make it plain that it is impossible to take a census of the machines themselves. They vary too much over a period of time and soon become obsolete. Furthermore, they cannot be reduced to any common unit. The horsepower, on the other hand, is a unit which has long been used to express the capacity of many different types of engines to drive machinery. The amount of mechanization of any field of productive activity over a period of time may be judged by the horsepower capacity of the engines operating the machines in relation to the number of employees. If the total amount of horsepower of the country's engines is appreciably greater now than it was ten years ago, it may be said that there is

more machinery installed now than during the previous decade.

Uses of Such an Index

An index of horsepower equipment or machinery, in the first place, may be used to help prove the economic theory that with every extension of the "roundabout process" (that is, with every increase in the use of tools and machinery), man's labor becomes more productive. The index of power installed per man may be compared with an index of product turned out per man. A genuine statistical basis will thus be furnished for the above generalization.

In the second place, aside from its theoretical aspects, the index of power equipment may be used to throw light on the much discussed superiority of American industry and American workmen. The material prosperity of the United States, in contrast to the difficulties that have hampered England, France, and Germany since the war, has attracted a great deal of attention both at home and abroad. All thinking people have asked themselves the reason for it. From England were sent two engineers to study and analyze the situation. The recent book of one of our greatest industrialists telling the how and the why of our success is said to be selling very widely in Europe. And the fact that for the last year almost every good periodical and newspaper has devoted large amounts of space to the subject, in the form of articles, editorials, or reports of congresses and conferences, is evidence of a widespread interest in this country as well.

All these discussions are much alike. They point out that production of wealth has increased more rapidly than population. There is, therefore, more wealth per inhabitant than before. And as a reason for this increased per capita enjoyment there is advanced the fact that there is more machinery used today in production; human labor is being supplanted by mechanical devices.

In the fifty years from 1869 to 1919, the population of the United States increased 2.76 times. In spite of the shift in population from the country to the city, so that only one-quarter of those in gainful occupations were employed in agriculture in 1919, while nearly the half were so engaged in 1869, the agricultural production increased 4.49 times, or 80% more rapidly than the population. During the same 50 years, the products of mines increased 18.81 times, or nearly 7 times more rapidly than the population. The manufactured products increased 9.61 times, or about 3.5 times more rapidly than the population. While many factors contributed to these increased outputs, the most important factor is undoubtedly the increased production and utilization of mechanical power by machinery. Today, the drudgery of the struggle for existence has largely been transferred to machinery vitalized by mechanical power, thus making universal education possible by sparing youth from the farm and the factory.[1]

And again:

All this power increases output and decreases sweat. While we have increased our manufacturing employees 65% in the last quarter of a century, we have swelled productivity on a quantity basis in the neighborhood of 170%. Our farms produce 37% more with about 20% more farmers; our railways carry about 170% more traffic with 61% more men. And with all we have in 25 years decreased the weekly hours of labor by about 9%, while real wages have increased 40% or 50%. The terrors of unemployment have been lessened.[2]

Without going into the accuracy of the figures, it may be said that these statements reflect the general belief and

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[1] Address of William L. DeBaufre, retiring president of the Nebraska Chapter of Sigma Xi, on May 15, 1925, reprinted in *Science*, October 30, 1925, Vol. 62, No. 1609, p. 381.

[2] Herbert Hoover, in *The Nation's Business*, June 5, 1926, p. 14.

attitude on the subject. But there has never been, it is believed, a complete survey of the amount of these mechanical devices which are so greatly increasing our per capita output.

Method of Investigation

The term "horsepower equipment" is used in reference to the engines or motors whose horsepower represents the amount of machinery installed. A synonymous designation is "prime movers." A prime mover may be defined as an engine which utilizes the potential energy from some natural source (such as coal, wood, petroleum, or water) and converts it into the energy of motion. Thus, steam engines and turbines, internal combustion engines, and water wheels and turbines are prime movers. But electric motors are not classified as primary horsepower equipment because they do not utilize the original sources of energy. They are run by electricity generated in dynamos, after the latter are set in motion by some prime mover. In dealing with manufactures alone, however, the census treats the horsepower of motors driven by purchased electricity as "primary power," since to this field by itself such power is the same as that obtained from its own prime movers.

Statistics of horsepower equipment, which are as nearly as possible complete for all fields of productive activity in the United States, are shown over a period of eight and one-half decades at ten-year intervals, from 1849 to 1923. Naturally, the more recent years have yielded more exact information; there was less need for estimating for 1909, 1919, and 1923 than for the earlier periods. The equipment was apportioned among ten fields of activity. For each census period, horsepower data were gathered for manufactures, mines and quarries, agriculture, irrigation and drainage, electric central stations, electric railroads, steam railroads, ships, automobiles, and work animals not on farms. This made it possible to notice the trend in the use of equipment in any one field and to discern the relative importance at any one time of any field of endeavor.

Furthermore, equipment was classified, for the country as a whole and for each of the above fields, as to type of prime mover—steam, internal combustion, and water. Note was also made of purchased electricity, since, to the field using it, this would be primary power. This classification made possible an analysis of the distribution and importance of the various types at any one time and of the trend throughout the 74-year period.

Another treatment of the material that was carried out was the division of the equipment into larger groupings: "manufactures," including the horsepower in manufactures and that portion of electric central station equipment which is used for light and heat by consumers; "materials" and food, comprising the horsepower in mines and quarries, agriculture, and irrigation and drainage; "transportation," made up of the equipment in electric and steam railroads, ships, automobiles, and work animals not on farms. "Manufactures" and "materials" were then grouped together for the sake of comparing equipment used to produce "form utilities" with that employed for the production of "place utilities." A further division of transportation horsepower was made in order to distinguish between "light" and "heavy" types, electric and steam railroads and ships, of course, being included under the latter, and automobiles and work animals not on farms belong-

ing to the former. Finally, in order to portray the growth of electric equipment, the horsepower of electric central stations and electric railroads, and the horsepower of motors used in manufactures and mines to generate their own power were grouped together.

It should constantly be borne in mind that the statistics are those showing horsepower equipment, and not horsepower production. That is, the data that have been compiled show *capacity*, not *actual* use. None of the equipment is used 24 hours of every day. On the contrary, most of it is in use only a small fraction of the time. The figures, therefore, are an indication of what *could have* been, not a record of what *was*. It is true that, for purpose of comparison with indices of production, an index of actual horsepower use would be more valuable, but there are at present no statistics available from which such an index might be constructed.

Results of the Study

Statistical records of early installations of prime movers are very sketchy and incomplete. Manufacturing during the Colonial period was chiefly a hand process. The mills that did exist were very small and of purely local importance. Consequently, there are no figures at all available concerning the amount of horsepower equipment in existence before 1790.

The record does not greatly improve for the period of 1790 to 1860. No census of prime movers was taken until 1870, when a report on manufactures included statistics of horsepower capacity. But fairly accurate estimates for the years 1849 and 1859 may be made from such items as number of establishments, number of employees, capital investment, and value of product given in the censuses of 1850 and 1860. A study of horsepower equipment on farms also presents estimates for these years,[3] so that figures of moderate reliability may be obtained for manufactures and agriculture, the two fields of greatest importance before 1860. But it must be remembered that the material shown for the later decades is much more accurate, being based almost wholly on actual census reports and reliable information. Estimates in certain fields had to be made for 1923; these, however, are relatively reliable, because their bases come from recent, reliable sources. But 1923 is the latest year for which accurate statistics are available in most of the ten fields of activity. There are no statistics for manufactures after 1923, for mines after 1920, for agriculture after 1924, for irrigation and drainage after 1920, for electric central stations and electric railroads after 1922, for steam railroads after 1925, for ships after 1925, for automobiles after 1926, and for work animals not on farms after 1920.

In Table I is shown the total amount of horsepower equipment in this country for each decade from 1849 to 1923. From 10 millions it has grown to the astonishing total of 684 millions of horsepower — more than 68 times as much in the last-named year as in the first. Each decade has witnessed a steady increase, but since 1899 the development has been almost phenomenal. Before that time the increase over any 20-year span has never been much more than twofold, but in the two decades from 1899 to 1919 the growth was more than sixfold. Only four years more, and the 1923 total was over ten times the 1899 figure.

[3] C. D. Kinsman, *An Appraisal of Power Used on Farms in the United States*, Government Printing Office, Washington, 1925.

The chief reason, of course, for this recent enormous growth is the increasingly extensive use of the internal combustion engine in the pleasure automobile. Over 450 millions, or almost two-thirds of the 1923 total, belong to this field. This equipment is not really productive, being used for the most part as a direct means of satisfying wants—that is, as consumers' goods, not used in further production. Therefore, the table also represents figures for the later years which show the amount of equipment after pleasure vehicles have been subtracted from the totals. Here the growth, though quite pronounced and rather more rapid than before 1899, is more even. From 1849 to 1923 the increase is about 23-fold, while since 1899 the growth has been more than 3½ times.

Table I furnishes a picture of the continual growth of horsepower equipment over a long period of time, gathering speed and momentum with each decade. But a more detailed inquiry is necessary in order to determine the exact nature and trend of this development. Table II shows the installed capacity for each field of endeavor by decades.

It is at once evident that automobiles have experienced the greatest relative increase. Two obvious conclusions may be drawn from the data; a very great increase in the use of the automobile for pleasure, and a very great increase in its use for commercial purposes. Of the two, the first represents by far the larger amount of equipment, but, as shown by detailed inquiry, the second is increasing at a much more rapid rate.

After automobiles come electric central stations, irrigation and drainage, and electric railroads, displaying a rate of increase unusually large. Each one was of quite minor importance in 1899.

TABLE I. TOTAL HORSEPOWER EQUIPMENT IN THE UNITED STATES, 1849-1923

Year	Absolute Numbers (*in thousands of horsepower*)	Index Numbers (*1899 = 100*)
1849	10,066[1]	16
1859	15,793[1]	25
1869	19,147	35
1879	28,820	45
1889	47,697	74
1899	64,193	100
1909	120,331	188
1919	396,118	617
1923	684,044	1,063
	Less Horsepower of Pleasure Automobiles	
1899	64,161	100
1909	112,873	176
1919	176,650	275
1923	230,514	360

[1]Data for first two decades very incomplete; almost wholly estimated.

Now electric central stations are of great significance, supplying power as they do to factories, railways, and home consumers. This field reflects the increasing importance of electricity in all phases of life. Electric railroads illustrate the same point in the more specialized field of transportation. The magnitude of the increase in pumping equipment in reclamation projects suggests the fact that the nation's population is increasing to such an extent that lands at high fertility are no longer obtainable. Less fertile lands are being cultivated; by increasing the amount of machinery, it is hoped to make man's labor more productive.

This is brought out also by the marked increase in the use of horsepower equipment in the field of agriculture as a whole. Mechanical devices have begun to supplant animal and man power. Gasoline engines, trucks, tractors, electricity—all are being used more and more by the farmer.

Two other fields of activity show a rather high rate of increase, most of

which has been effected during the twentieth century. The growth of transportation facilities, as illustrated by the increase of equipment in steam railroads and ships, brings out the development of the United States in industry and in population which consumes the products of industry and agriculture. The unusual growth of ship horsepower since 1899 is indicative of two things other than the supplanting of the sailing vessel by the engine-propelled craft; an attempt to carry some of the commerce of nations (a recent attempt brought on by the World War and reflected by the great increase since 1909), and an effort to supplement rail transportation in this country with carriage by water.

A third field, the horsepower of which doubtless belongs in greater part to the transportation group, is work animals not on farms. They increased rather steadily until 1919, but since then their number has been less than it was in 1879. This falling off is coincident with the great advances made by mechanical carriers during the recent decades.

In the two remaining fields, manufactures and mines, the growth of equipment has not been quite so pronounced. But the increase has been steady, and points to an ever increasing installation of labor-saving devices calculated to increase production and lessen costs. In the case of mines there is suggested the need of machinery to overcome the state of diminishing returns that accompanies the penetration of poorer, deeper veins.

The horsepower figures for manufac-

TABLE II. TOTAL HORSEPOWER EQUIPMENT IN EACH FIELD OF ACTIVITY, BY DECADES[1]

HORSEPOWER (*in thousands*)

Year	Manufactures[2]	Mines and Quarries[3]	Agriculture[4]	Irrigation and Drainage[5]	Electric Central Stations[6]	Electric Railroads[7]	Steam Railroads[8]	Ships[9]	Automobiles[10]	Work Animals not on Farms[11]
1849	1,100	50	6,597				435	734		1,150
1859	1,600	150	9,655				1,940	1,142		1,306
1869	2,346	350	9,588				4,100	1,076		1,687
1879	3,411	650	13,764	5			7,720	1,110		2,160
1889	5,939	1,300	19,835	33	120	140	16,300	1,444		2,675
1899	10,098	2,868	23,519	120	1,200	1,079	20,900	1,900	32	3,055
1909	18,675	4,608	31,107	361	5,225	3,718	45,400	3,122	7,714	3,405
1919	29,505	6,724	43,722	816	15,250	6,327	72,300	6,584	230,432	1,979
1923	33,094	7,500	47,420	1,300	22,000	6,784	74,600	10,262	507,254	1,700
	INDEX NUMBERS (*1899 = 100*)									
1849	11	2	28				2	39		38
1859	16	5	41				9	60		43
1869	23	12	41				20	57		55
1879	34	23	59	0.5			37	59		71
1889	59	45	85	27	10	13	78	76		88
1899	100	100	100	100	100	100	100	100	100	100
1909	186	160	132	300	436	345	216	164	2,410	111
1919	295	234	186	680	1,270	587	346	346	721,000	65
1923	328	261	202	1,092	1,832	628	357	540	1,585,000	56

[1]Each field is regarded separately; i.e., electricity purchased from central stations is included in manufactures, mines, agriculture, and electric railroads, while auto trucks used on farms are included with agriculture as well as with automobiles.

[2]Estimated for 1849 and 1859 on basis of number of employees and by extrapolation. Data for all other years from Census Reports.

[3]Data from Census Reports for 1899, 1909, 1919. Estimated for other years from different sources.

[4]Data from study by C. D. Kinsman, Agricultural engineer, an appraisal of Power on Farms in the United States, Government Bulletin No. 1348, Washington, D. C., 1925.

[5]Data from Census Reports except for 1879, 1889, and 1899. Estimated for these years on basis of acreage.

[6]Special Census Reports give data for 1902, 1907, 1912, 1917, and 1922. Data for 1889 and 1899 estimated on basis of historical facts in these Reports and carried back by extrapolation. Data for 1909 and 1919 estimated from neighboring years by interpolation, 1923 by extrapolation.

[7]Same sources and methods as for Electric Central Stations.

[8]Estimated from 1899 to 1923 on basis of pounds tractive force reported by Interstate Commerce Commission. For previous years, estimated on basis of track mileage and number of locomotives.

[9]Estimated, based on tonnage of vessels reported by Bureau of Navigation.

[10]Estimated from registration figures, to which horsepower factors were applied.

[11]Data by Mr. Kinsman. See Note 4 above.

tures in 1923 were over 3 times those for 1899 and about 30 times those for 1849. This indicates the trend toward the use of highly specialized machinery making for the minute division of labor and the organization of production in factories on a large scale. The United States is becoming more and more an industrial nation.

Horsepower equipment in the different fields is considered in a somewhat different light in Table III. Here the relative importance of each field for any one decade is shown. The totals on which the percentages of distribution are based are somewhat different from those given in Table II, in order to avoid duplicate counting of power equipment. In Table II, each field is treated separately; any power purchased by one from any other field is counted as primary power to the purchasing field, as well as to the "selling" field. But in Table III obvious double counting is avoided by treating such power only at its source; for example, electricity purchased by manufactures from electric central stations is included only with the equipment of the latter field. Similarly, trucks used on farms are included only in the field of automobiles.

In 1849 agriculture was by far the most important field for power in the United States, over 65% of the total amount of equipment being found in this division. Work animals not on farms, manufactures, ships, and railroads follow in importance. Evidently the country was still chiefly in the agricultural stage, possessing but little me-

TABLE III. PER CENT DISTRIBUTION, FIELDS OF ACTIVITY, BY DECADES[1]

HORSEPOWER (*in thousands*)

Year	Manufactures	Mines and Quarries	Agriculture	Irrigation and Drainage	Electric Central Stations	Electric Railroads	Steam Railroads	Ships	Automobiles	Work Animals not on Farms	Totals
1849	1,100	50	6,507				435	734		1,150	10,066
1859	1,600	150	9,655				1,940	1,142		1,306	15,793
1869	2,346	350	9,588				4,100	1,076		1,687	19,147
1879	3,411	650	13,764	5			7,720	1,110		2,160	28,820
1889	5,850	1,300	19,835	33	120	140	16,300	1,444		2,675	47,697
1899	9,778	2,754	23,519	120	1,200	935	20,900	1,900	32	3,055	64,193
1909	16,803	4,403	30,807	361	5,225	3,091	45,400	3,122	7,714	3,405	120,331
1919	20,063	5,112	39,222	816	15,250	4,360	72,300	6,584	230,432	1,979	396,118
1923	19,728	5,000	38,100	1,300	22,000	4,100	74,600	10,262	507,254	1,700	684,044
	LESS PLEASURE AUTOMOBILES										
1899	9,778	2,754	23,519	120	1,200	935	20,900	1,900	0	3,055	64,161
1909	16,803	4,403	30,807	361	5,225	3,091	45,400	3,122	256	3,405	112,873
1919	20,063	5,112	39,222	816	15,250	4,360	72,300	6,584	10,964	1,979	176,650
1923	19,728	5,000	38,100	1,300	22,000	4,100	74,600	10,262	53,724	1,700	230,514
	PER CENT OF EACH YEAR'S TOTAL										
1849	10.90	0.50	65.52				4.30	7.30		11.48	100.00
1859	10.12	0.94	61.18				12.26	7.24		8.26	100.00
1869	12.24	1.83	50.03				21.37	5.72		8.81	100.00
1879	11.82	2.26	47.77	0.02			26.81	3.86		7.46	100.00
1889	12.24	2.73	41.60	0.07	0.25	0.29	34.19	3.03		5.60	100.00
1899	15.23	4.28	36.63	0.19	1.87	1.46	32.57	2.96	0.05	4.76	100.00
1909	13.98	3.66	25.62	0.30	4.33	2.57	37.73	2.59	6.41	2.83	100.00
1919	5.05	1.29	9.90	0.21	3.85	1.10	18.25	1.66	58.20	0.49	100.00
1923	2.89	0.73	5.57	0.19	3.22	0.60	10.91	1.50	74.14	0.25	100.00
	LESS PLEASURE AUTOMOBILES										
1899	15.24	4.29	36.66	0.19	1.87	1.46	32.57	2.96	0.00	4.76	100.00
1909	14.89	3.90	27.29	0.32	4.63	2.73	40.22	2.77	0.23	3.02	100.00
1919	11.82	2.88	22.23	0.46	8.63	2.47	40.92	3.76	6.21	1.12	100.00
1923	8.57	2.17	16.51	0.57	9.55	1.78	32.34	4.46	23.31	0.74	100.00

[1]No double counting in this table. For example, electricity purchased by manufactures from central stations is included only with the latter, and trucks used on farms are included only with automobiles.

Sources and estimates explained in Table II.

chanical equipment. Even all of the farm horsepower was in work animals. Animals not on farms were second in importance, their chief use doubtless being in transportation. It is interesting to note that in 1849 they were almost three times as important as steam railroads.

In 1859 the same general situation is revealed, with minor changes. Agriculture, though it has lost some ground, still dominates the field. Steam railroads, however, have made an important increase and have decisively usurped second place from animals not on farms. The actual percentage allotted to manufactures has decreased slightly, but this field, too, is ahead of animals not on farms. The other items are about the same.

Ten years later, much the same picture is presented. But although the relative position of each field is unchanged, the equipment in steam railroads and manufactures has increased to such an extent that they have again cut largely into the leading position enjoyed by the field of agriculture. Corn is still king, with half the equipment still in his domain, but there seems to be indications of a start on the road to industrialism away from a purely frontier agricultural country.

The fourth decade, 1879, depicts the same situation in a later stage. All forms of real mechanical power, such as manufactures, mines and quarries, and steam railroads, have increased relatively at the expense of the fields in which little or no mechanical equipment is in use (agriculture, ships, work animals not on farms). For the first time the power capacity of agriculture forms less than one-half of the total.

In 1889 a similar arrangement prevails. Agriculture has suffered a further decrease. For the first time there appear items in the column given to electric central stations and electric railroads. The power equipment in the field of irrigation and drainage, which first was employed in 1879, has increased; but it is always a relatively insignificant factor.

By 1899 each of the ten fields of activity has a place on the table. This time the automobile is the newcomer. At the end of the century it offers no hint of the extraordinary position it is to assume 20 years later. Agriculture has again fallen in relative importance, but remains the largest single item. The rankings are the same as for 1889. It will be noted that in 1899 manufactures attains its highest percentage for the whole 74-year period. The reason is simply that, from this time on, much of the power used in this field is purchased from electric central stations. The prime movers making this energy are included with the latter field in this table, instead of being put in the manufactures column.

The decade of 1909 finds agriculture toppled from its former elevated position to second place. It is now more than ten points below its successor, steam railroads. Electric central stations have become more important than mines or ships. The same is true for automobiles. This year, then, seems definitely to point to the fact that the United States has turned from the agricultural to the manufacturing stage. The figures for the preceding two decades, of course, had presaged this situation.[4] The steady increase in the amount of equipment on steam railroads also points to a growing geographic speciali-

[4] It is realized, of course, that showing the trend of horsepower equipment is only one way of substantiating this assertion. There are other things to be considered, such as amount and value of products, capital invested, number of employees.

zation and division of labor within the country.

In the years 1919 and 1923 the immense amount of horsepower representing automobiles overshadows all other fields and dwarfs them to such an extent that it is difficult to gain a fair idea of their importance. It is advisable, therefore, to subtract the equipment of pleasure automobiles from that field. In 1919, then, steam railroads are first, with over 40% of the total. Agriculture and manufactures follow. The new importance of electric central stations may be observed in a percentage almost double that for 1909 and not far below the figure for manufactures. The shipbuilding renaissance is undoubtedly responsible for the increase in this field after a long period of decline. In 1919 ships were of greater relative weight than mines and quarries and electric railroads. It is also important to note that even after the deduction of pleasure automobiles, the item of trucks amounted to such a figure that automobiles still had over 6% of the whole—next in rank to electric central stations.

In 1923 the amount of horsepower in trucks is still greater, second only to that in steam railroads. While the latter field is still first, its percentage is more than eight points below the high mark of 1919. This indicates the increasing use of the truck as a carrier. The relative importance of agriculture is also much below its 1919 position; this may partly be due to the fact that farmers have begun to use central station electricity. The same is true for electric railroads and mines.

A glance at the electric central station column for 1923 shows how important this field has become. Other fields are beginning to look to it, wherever possible, for this economical form of power. Manufactures, mines, agriculture, and electric railroads purchase increasingly large amounts of electricity. In addition, the number of consumers for light and heat purposes is growing. These facts account for the central station total exceeding the owned horsepower equipment in manufactures for 1923. The relative importance of the former will doubtless increase as time goes on.

The results of the study of the distribution of horsepower equipment among the ten fields of activity over 74 years may be summarized under three heads. First, the United States has changed from a nation primarily agricultural, exporting raw materials and importing manufactured goods, to a nation in the main manufacturing. Agriculture is still quite important; it is not necessary to import many raw materials. But the dominating activity of the country is manufacturing.

Second, the great growth of equipment in the transportation fields points to geographic division of labor and localization of productive activities. It may also show the effect of increasing population and settlement.

Third, the rapid development of electric power indicates the important rôle which it may play in the future growth of this country.

Types of Prime Movers

A second manner of analysis concerns itself with the growth of horsepower equipment among the different types of prime movers. Table IV presents figures of this nature. It will be observed that the most rapid development is in the internal combustion type. This was to be expected from the enormous increase in the field of automobiles, the engines of which are almost entirely driven by gasoline fuel. Internal com-

bustion engines are used in other fields also, but in 1923 over 500 millions of the 526 millions of horsepower came from motor vehicles. However, an appreciable amount of this is in trucks, and it must also be remembered that there has been a general increase in the use of gas engines in manufactures, mines, and agriculture.

Consequently, if pleasure automobiles are deducted from the total, it will be found that internal combustion still leads in rate of increase, although in absolute amount of equipment it is second to steam engines. Whether or not the internal combustion type will continue its remarkable advance seems to depend upon whether or not adequate substitutes can be found for the rapidly disappearing supply of petroleum.

Steam engines, which are second in absolute amount of equipment, show a steady and ever increasing rate of development. This kind of prime mover is the nation's chief instrument of production. In 1923 its total was over 100 times the amount established for 1849, a year when its use was still relatively limited, and 3¼ times the figure for 1899. It is doubtful if the supremacy of steam and coal will be seriously threatened for many years. It has been said that hydroelectric power, even completely developed, can supply less than one-fourth of the country's power needs.

But it is quite evident from Table IV that hydroelectric development is an item of importance in the power program of the present. Water wheels and engines were widely used in manufacturing before the Civil War. The growth before 1899 is slow but steady. With the development of electricity as a form of power, however, there has been a remarkable acceleration in the use of water engines and turbines. From 1849 to 1899 the increase was less than threefold, but from the latter year to 1923 the growth has been almost 5¼ times.

Another important source of power in the early days was work animals. Their number increased slowly up until 1909; since then there has been a rather marked decline. Since by far the greater portion of these animals was employed on farms, this column substantiates the conclusion reached before, that they are being supplanted by mechanical forms of energy.

Since 1849 horsepower equipment driven by wind has been the least important type of power. Before that

TABLE IV. TOTAL HORSEPOWER EQUIPMENT FOR EACH TYPE OF PRIME MOVER, BY DECADES

	HORSEPOWER (*in thousands*)					INDEX NUMBERS (*1899=100*)				
Year	Steam	Internal Combustion	Water	Wind	Work Animals	Steam	Internal Combustion	Water	Wind	Work Animals
1849	1,228		662	429	7,747	3		36	65	35
1859	3,263		930	639	10,961	8		50	97	49
1869	6,215		1,205	452	11,275	16		65	69	50
1879	11,636		1,353	507	15,324	30		73	77	69
1889	24,281	17	1,522	566	21,311	63	2	82	86	96
1899	38,445	956	1,860	658	22,274	100	100	100	100	100
1909	77,055	13,170	4,022	822	25,212	200	1,375	216	125	114
1919	116,380	247,031	7,650	836	24,221	303	25,800	412	127	109
1923	125,773	526,322	9,598	851	21,500	327	55,100	521	129	97
	LESS PLEASURE AUTOMOBILES									
1899	38,445	924	1,860	658	22,274	100	100	100	100	100
1909	77,055	5,712	4,022	822	25,262	200	618	216	125	114
1919	116,380	27,563	7,650	836	24,221	300	2,980	412	127	109
1923	125,773	72,793	9,598	851	21,500	327	7,880	521	129	97

time it undoubtedly was one of the chief ways in which man utilized natural sources of energy. The figures in this column are composed of windmill horsepower on farms and the equivalent of sailing vessel power. Neither is of great significance, although both have their uses. The large drop in amount of horsepower from 1859 to 1869 was doubtless the result of the Civil War and its proof of the superiority of the steam-propelled vessel over the sailing ship.

The distribution of total horsepower equipment for each decade among the five types of prime movers may be observed in Table V. The fact that immediately appears most striking is the predominance of work animals for the first four decades. Although their relative importance decreases with each ten-year period, they amount to over half of the total amount up to and including 1879. This means that less than half of this total was mechanical power. And since the great majority of the animals were used on farms, here again there is evidence of the prevailing agriculturalism during these years.

Steam power, however, mounted steadily from the small beginning in 1849. It amounted to over 40% in 1879 and by 1889 it had taken first rank from work animals, with almost 51%. From that time forward, if pleasure automobiles are as usual subtracted from the internal combustion division, steam engines are chief among the prime movers. However, their relative weight has dropped somewhat since 1909. This is due to the rapid increase of truck equipment.

Internal combustion engines appeared first in 1889. By 1909 they had attained second place, and in 1919 and 1923 they overwhelmed the other groups by mere force of numbers. Even with the pleasure type removed, this division is second only to steam power, being in 1923 almost one-third of the total.

Water turbines and engines never attain more than third rank. Beginning with 1909, they drop to fourth place. The general trend in relative importance up to 1899 is downward, but the effect of the generation of electricity in connection with water sources may be seen in small increases thereafter. This growth is more evident from the absolute numbers than from the percentages.

Work animals have always been an item of importance. Up to and including 1909, their numbers increased, but thereafter a falling off is noticeable, especially in 1923. Mechanical means of transporting people and goods are

TABLE V. PER CENT DISTRIBUTION, TYPES OF PRIME MOVERS,[1] BY DECADES

	HORSEPOWER (*in thousands*)						PER CENT OF EACH YEAR'S TOTAL				
Year	Steam	Internal Combustion	Water	Wind	Work Animals	Totals	Steam	Internal Combustion	Water	Wind	Work Animals
1849	1,228		662	429	7,747	10,066	12.19		6.58	4.26	76.97
1859	3,263		930	639	10,901	15,793	20.66		5.88	4.05	69.41
1869	6,215		1,205	452	11,275	19,147	32.51		6.21	2.36	58.92
1879	11,636		1,353	507	15,324	28,820	40.38		4.69	1.76	53.17
1889	24,281	17	1,522	566	21,311	47,697	50.89	0.03	3.20	1.19	44.69
1899	38,445	956	1,860	658	22,274	64,193	59.84	1.49	2.90	1.02	34.75
1909	77,055	13,170	4,022	822	25,212	120,331	63.99	10.94	3.34	0.68	21.05
1919	116,380	247,031	7,650	836	24,221	396,118	29.42	62.32	1.92	0.21	6.13
1923	125,773	526,322	9,598	851	21,500	684,044	18.33	77.00	1.41	0.12	3.14
	LESS PLEASURE AUTOMOBILES										
1899	38,445	924	1,860	658	22,274	64,161	59.87	1.44	2.90	1.02	34.77
1909	77,055	5,712	4,022	822	25,262	112,873	68.26	5.07	3.57	0.73	22.37
1919	116,380	27,563	7,650	836	24,221	176,650	66.00	15.56	4.33	0.47	13.64
1923	125,773	72,792	9,598	851	21,500	230,514	54.57	31.57	4.16	0.37	9.33

[1]Based on similar data for each field of activity.

supplanting them. This trend will probably continue, although there are some uses for work animals which do not at present admit of mechanical substitution.

Groupings of Power Equipment

Certain major groupings of horsepower equipment among the ten fields may be observed in Table VI. It will be seen that power in the grouping of "manufactures" has increased at a swifter pace than in the division of "materials," although the latter exceeds the former in absolute amount during every decade. But, as would be expected from the inclusion of pleasure automobiles, the "transportation" group has grown most rapidly of all. After 1899 it exceeds the others in absolute amount as well. The rate of development in manufactures and materials shows a kind of balance between the rates of the two groups of which it is composed. It is more satisfactory for comparison with the "transportation" division, for it represents all the equipment used in producing "form utilities," while the latter is made up of horsepower devoted to producing "place utilities." In absolute amount manufactures and materials exceed the transportation group to and including 1899, but from then on the latter forges ahead. The increase in the former division from 1849 to 1923 is over 11½ times, and from 1899 to 1923 almost 2½ times.

It is quite striking that for more than 15 years a so much greater amount of equipment has existed for moving persons and goods from place to place than for making things. In so far as this is caused by equipment used for carrying the products of manufactures, mines and quarries, and agriculture, the conclusion that geographic specialization of production has gone far in this country is verified. And in so far as

TABLE VI. HORSEPOWER EQUIPMENT IN GROUPINGS

HORSEPOWER (*in thousands*)

Year	Manufactures[1]	Materials[2]	Transportation[3]	Manufactures and Materials	Transportation less Pleasure Automobiles	Heavy Transportation[4]	Light Transportation[5]	Electric Motors[6]
1849	1,100	6,647	2,319	7,747	2,319	1,169	1,150	
1859	1,600	9,805	4,388	11,405	4,388	3,082	1,306	
1869	2,346	9,938	6,863	12,284	6,863	5,176	1,687	
1879	3,411	14,419	10,990	17,830	10,990	8,830	2,160	
1889	5,070	21,168	20,559	27,138	20,559	17,884	2,675	
1899	10,720	26,507	26,966	37,227	26,934	23,879	3,087	2,577
1909	20,894	36,076	63,350	56,970	55,936	52,240	11,119	11,878
1919	30,243	51,262	317,622	81,505	100,202	85,211	232,411	27,839
1923	34,344	56,220	600,600	90,564	148,612	91,646	508,954	34,922
	INDEX NUMBERS (*1899=100*)							
1849	10	25	9	21	9	5	37	
1859	15	37	16	31	16	13	42	
1869	22	39	26	33	26	22	55	
1879	32	55	41	48	41	37	70	
1889	56	80	76	73	76	75	87	
1899	100	100	100	100	100	100	100	100
1909	195	136	235	153	208	219	361	461
1919	282	194	1,178	219	374	357	7,530	1,082
1923	320	212	2,230	243	552	384	16,470	1,356

[1]Includes manufactures and electric central stations, less the equipment of the latter used in mines and quarries, agriculture, and electric railroads.

[2]Includes mines and quarries, agriculture, and irrigation and drainage.

[3]Includes electric railroads, steam railroads, ships, automobiles, and work animals not on farms.

[4]Includes electric railroads, steam railroads, and ships.

[5]Includes automobiles and work animals not on farms.

[6]Includes horsepower equipment in electric central stations and electric railroads, plus the owned electric equipment of manufactures and mines (except, in mines, for the year 1923.)

this situation is the result of equipment used for transporting persons, it may be called as witness to the statement that the citizens of this nation are enjoying unprecedented wealth and leisure. Especially is this true in the case of pleasure automobiles. It is interesting also to speculate as to whether or not the fact that such an immense amount of transportation equipment is necessary will not work towards causing a relocation of manufacturing industries with respect to markets and raw materials. A better comparison of "form utility" equipment with "place utility" equipment may be obtained if the horsepower in pleasure automobiles is subtracted from the transportation group. The latter will then include only equipment which is mostly "productive." If manufactures and materials are compared with this group, it will still be seen that the rate of increase shown in the latter is much more rapid than that of the former. And after 1909, transportation, less pleasure automobiles, appreciably exceeds manufactures and materials in absolute amount of equipment.

Another division of horsepower used in transportation which suggests itself is the separation thereof into "heavy" and "light" groups. In the last decades the amount of equipment in the latter is so swelled by the pleasure car that it far surpasses the sum of steam railroads, ships, and electric railroads. Until 1899, however, the rate of growth shown by the latter is faster, since the other group was then composed of work animals. In "heavy" transportation the 1899 figure is 20 times the 1849 amount, while in "light" transportation it is less than 3 times. But the situation is reversed in 1923; since 1899 the growth in the "heavy" group is less than 4 times, while the increase in the "light" division is over 164 times.

That the use of electric power has proceeded at a rapid pace is shown by the fact that the horsepower equipment thus represented has increased

TABLE VII. HORSEPOWER EQUIPMENT PER EMPLOYEE[1]

HORSEPOWER

Year	Per Inhabitant in Nation	Per Employee in Nation	Per Inhabitant, less Pleasure Automobiles	Per Employee, less Pleasure Automobiles	Per Employee in: Manufactures	Mines and Quarries	Agriculture	Electric Central Stations	Electric Railroads	Steam Railroads	Ships	"Manufactures"	"Materials"	"Heavy Transportation"	"Manufactures and Materials"
1849	0.43	1.44	0.43	1.44	0.92	0.61	1.32			2.4	7.0	0.92	1.31	4.1	1.23
1859	0.50	1.50	0.50	1.50	1.07	0.95	1.72			7.8	11.2	1.07	1.70	8.8	1.58
1869	0.50	1.53	0.50	1.53	1.14	2.11	1.63			10.9	12.1	1.14	1.65	10.6	1.52
1879	0.58	1.66	0.58	1.56	1.25	2.61	1.80			14.0	12.5	1.25	1.82	13.8	1.68
1889	0.76	2.05	0.76	2.05	1.40	3.36	2.32	24.0	1.97	21.8	18.8	1.40	2.39	19.9	2.08
1899	0.85	2.21	0.85	2.21	1.90	4.63	2.29	48.0	8.18	22.5	24.3	2.02	2.44	21.0	2.30
1909	1.31	3.16	1.23	2.96	2.82	4.77	2.52	95.0	14.87	30.2	25.8	3.13	2.70	27.9	2.85
1919	3.75	9.52	1.67	4.25	3.26	6.17	4.10	127.5	21.40	37.8	38.1	3.32	4.37	35.8	3.90
1923	6.21	15.70	2.10	5.31	3.76	6.52	4.74	157.0	22.25	40.3	51.3	3.85	5.05	37.4	4.51

INDEX NUMBERS (*1899=100*)

1849	51	65	51	65	48	13	58			11	29	46	54	19	53
1859	59	68	59	68	54	21	75			35	41	53	70	42	69
1869	59	69	59	69	60	46	71			45	50	56	68	51	66
1879	68	75	68	75	66	56	79			62	52	62	75	66	73
1889	89	93	89	91	74	73	101	50	24	97	77	69	98	93	91
1899	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1909	154	143	145	134	148	103	110	197	182	134	110	155	110	133	124
1919	440	430	196	192	171	133	179	264	262	168	157	164	179	170	169
1923	730	710	247	240	198	141	207	327	272	179	211	190	207	178	196

[1]Figures obtained by dividing amount of horsepower equipment in various fields by numbers of inhabitants and employees found in census and other statistical publications).

over 13½ times since 1899. This, of course, includes more than central station power. The increase in the latter has been greater, as shown in Table II, indicating that plants are now buying more from the central supply instead of generating their own.

Horsepower per Employee

Perhaps the most interesting as well as the most valuable findings of the study are set forth in Table VII. It was possible to obtain the numbers of workmen for the country as a whole and for the fields of manufactures, mines, agriculture, electric central stations, electric railroads, steam railroads, and ships, and then to divide them by the amount of horsepower equipment in order to learn the installation per employee. Index numbers based thereon show the increased use of machinery in this country perhaps better than any other way.

In 1849 there was less than one-half of a horsepower used for each person living in the United States, while in 1923 the per capita installation was almost 6¼, an increase of nearly 14½ times. In the last years, however, the figure is again set greatly out of line by the item of pleasure automobiles. If this be deducted, it will be found that the 1923 figure is 4.8 times that for 1849 and less than 3.5 that for 1899.

The actual amount of equipment per employee in the nation is more than twice that per unit of population, but the rate of increase is slower. With pleasure automobiles included, the 1923 installation is about 10.9 times the 1849 figure and 7.1 more than that for 1899. With this item removed, there is about 3.7 times as much power per worker in 1923 as in 1849 and 2.4 times as much as in 1899.

The largest equipment per employee is found in electric central stations, because of the type of power units which require few attendants. In the transportation fields there is also a large amount of power per worker for the same reason. Surprising as it may seem, there has almost always been less horsepower per employee in the field of manufactures than in mines and quarries or agriculture. One is accustomed to think of manufacturing as a shining example of the use of mechanical contrivances. And so it is, but in proportion to the energy required to produce the desired result, human labor has been less supplemented by machinery here than in any other field.

The most rapid rate of increase is found in electric central stations, where there existed in 1923 more than 3¼ times as much equipment per employee as in 1899. Of the transportation trio, electric railroads is first in rate of growth, with ships and steam railroads following as named. However, before 1899 steam railroads increased faster than ships.

Of the manufactures and materials trio, mines and quarries displays the swiftest growth before 1899, while agriculture goes into the lead after that turning point. Perhaps the steadiest advances are registered by electric central stations and manufactures.

Among the four large groupings there is a great deal more equipment per workman in heavy transportation than in the others. This is to be expected from the kind of equipment. "Materials" is also higher than "manufactures" in this respect, bearing out what appeared in the study of the fields themselves. As to rate of growth, the rise before 1899 is most rapid in heavy transportation, while thereafter it is found in the materials group. "Manu-

factures and materials" strikes a balance between the two groups of which it is composed. In general, its growth has been more even than that of the place utility group. Before 1899 the former's rate of increase was slower than that of the latter; but since then, because of the rapid rise of farm equipment since 1909, the form utility group has slightly outstripped heavy transportation.

The amount of equipment at the command of each inhabitant and employee in the country and in the various fields has thus increased steadily. The absolute amount in any field, of course, depends on the expenditure of effort required to produce a given result; one would expect larger installations per employee in the field of steam railroads than in the field of manufactures.

The important generalization that proceeds from a study of Table VII is that human effort is continually being supplanted by machinery and mechanical devices operated by prime movers. The work that man does is being performed more and more by the machines which he makes. Quantitative substantiation is thus afforded to the statement that the increased use of machinery has helped to shorten the working day and provide more leisure for the employee. The stage is set for comparing the index of horsepower equipment per employee with an index of amount of production per employee, in order to determine relationships. And a long step is taken towards determining whether or not the American workman's vaunted superiority is a fact. A similar study of horsepower equipment and productivity in European countries would give factual basis for an answer.

SOME PRINCIPLES UNDERLYING THE INTERPRETATIONS OF AN INDUSTRIAL RELATIONS AGREEMENT

By WADSWORTH H. MULLEN

VIRTUALLY every firm engaged in the manufacture of men's clothing in Chicago has operated since 1919 under an individual agreement entered into with the Amalgamated Clothing Workers of America, the leading union in the men's clothing field. Hart, Schaffner and Marx was the first Chicago house to embrace such an arrangement when, as a result of the strike of 1910, a joint agreement providing for the impartial adjudication of disputes relating to wages and working conditions was signed. Other firms in the market continued to operate under open-shop conditions until the spring of 1919, when another strike resulted in the signing of a three-year agreement by practically all of the houses of the market. These agreements were renewed, with a few minor changes, in 1922 and 1925, and their renewal for a fourth term is now pending.

The agreements under which these firms are now operating are identical, with the sole exception of the Hart, Schaffner and Marx agreement. The latter is more explicit in its terms, but all provide for the preferential shop (the principle that union labor is to be employed whenever available, and that non-union help is to be discharged before any union help is laid off during the slack season), the fixing of wage rates by collective bargaining, the collective adjustment of wage scales once a year at the request of either party,[1] the impartial review of disciplinary action, and for the establishment of a trade board and a board of arbitration for the settlement of "complaints or grievances within the scope of this agreement." The agreements also specify the hours of work per day and the rate of overtime pay.

The preamble of the first market agreement stated that:

> The parties hereto enter into an agreement for collective bargaining, with the intention of agreeing on wages and working conditions, and to provide a method for adjusting all differences that may arise during the terms of this agreement.

The impartial machinery set up to provide this method has jurisdiction over all matters arising within the scope of the agreement. The powers of the impartial boards may be likened to the powers granted to the Federal Government by the Constitution—such powers are delegated powers, while the powers of the various states are residual. The result of this granting to the union—and therefore the ultimate decision to the impartial boards—of joint control over wages and working conditions has been that the manufacturer has relinquished his former absolute control

[1] The agreements of Hart, Schaffner and Marx and B. Kuppenheimer provide for arbitration in case of dispute; agreements of the other firms provide that if ". . . . the parties find themselves unable to agree on wages before the anniversary date (of the signing of the agreement) either party may terminate this agreement in good faith."

over one of the departments of his business, the manufacturing department. Control over certain phases of manufacturing was delegated by the explicit terms of the agreement: control over wages, piece rates, and hiring, for example. But this control has gradually been extended by decisions of the impartial boards to include certain other phases, such as the training of apprentices, the introduction of machinery, the right to employ subcontractors, the opening of new shops and the closing of old ones, the routing of work, and the like, which were not specifically mentioned by the agreement. The attempt will be made in this article to formulate, by examination of the decisions of the impartial boards, the principles that seem to have guided them in rendering those decisions, principles developed more or less independently from those set forth in the agreement itself.

The study has been restricted to decisions involving firms under the jurisdiction of the market trade board, as distinct from the Hart, Schaffner and Marx board. This limitation was made because of the greater significance of the market cases and their less technical aspect; because of the similarity of the principles underlying the decisions, by reason of the fact that the same board of arbitration chairmen have, since 1919, officiated for both Hart, Schaffner and Marx and the rest of the market; and finally, because the very lack of explicitness of the market agreement has made for a wider extension of its terms than in the case of the more precise Hart agreement.

I. Elasticity of the Agreement

In view of the simple phraseology of the terms of the market agreement, a decision as to whether those terms were to be strictly construed was of paramount importance, and one which the impartial boards were very soon called upon to make. The manufacturers (and at times the union) were disposed to argue that had the conferees been disposed to grant to the union joint control over all the subjects set forth in the Hart, Schaffner and Marx agreement, the logical course would have been to adopt the wording of that agreement; and that failure to mention certain subjects, such as the methods of determining hour rates and the transfer of workers, was intended to place such subjects outside the sphere of joint control. The trade board, however, refused to accept this construction, and has ruled in a number of cases that the terms of the agreement were to be interpreted loosely. In Case number 3, that board stated:

> The trade board does not construe the provisions just quoted strictly, as requested .... A strict construction would in some cases run counter to the purposes of the agreement as set out in the preamble.

The board ruled in a similar fashion in Case number 154:

> The firm has argued at the hearing that a foreman is not within the jurisdiction of the trade board. The chairman rules adversely upon this contention. . . . At a recent meeting of the impartial chairmen of several of the cities this question of a broad as versus a strict interpretation was discussed, and it was the general consensus of opinion that the principle of broad interpretation should prevail.

Moreover, the board of arbitration has placed its approval upon a loose interpretation of the terms of the agreement, in Case number 27*a*:

> As regards the rule of strict versus broad interpretation, it has been the custom of the

present chairman of the board to consider not merely the specific language of a particular section, but also to have regard to the general spirit of the agreement and to the purposes as set forth in the preamble. In certain cases which have come up for decision under the Hart, Schaffner and Marx agreement, the present chairman has felt warranted in going against the explicit language of a particular paragraph, or the implication based on the absence of any reference to the matter in the agreement, especially when it seemed probable that the parties, in framing the agreement, did not have in mind the specific case which seems to fall under the wording in question.

II. The Applicability of the Hart, Schaffner and Marx Agreement

After the door had been thrown open to extensions and modifications of the terms of the market agreement by the impartial machinery's endorsement of the doctrine of loose construction, it necessarily devolved upon the two boards to select and expound, either verbally or by implication, the principles by which they were to be guided in both the interpretation and in the expansion of the various sections of the agreement. Probably the most obvious course of development was afforded by the presence in Chicago of the Hart, Schaffner and Marx agreement, and the group of cases decided thereunder. As stated before, the Hart agreement was much more explicit in its terms than the other agreements.

The impartial machinery has consistently held the market agreement to be a synopsis of the Hart, Schaffner and Marx agreement. Probably the most comprehensive statement of the trade board's attitude toward the relationship between the two agreements is contained in Case number 1179, Reconsideration:

> The applicability of the Hart, Schaffner and Marx agreement to the other houses in the market on points not covered specifically by the market agreement has been urged and denied by both sides as suited the occasion. . . . The trade board has understood, however, and has consistently ruled on the basis of that understanding, that the provisions of the Hart, Schaffner and Marx agreement were intended to govern with respect to points not covered by the market agreement. . . .

Again, in Case number 230:

> . . . The agreement under which we are working is essentially an abbreviation of the Hart, Schaffner and Marx agreement.

With reference to the applicability of the decisions of the Hart trade board the market board has ruled as follows (Number 1179, Reconsideration):

> This (applicability) has also been argued pro and con by both sides on occasion. This board has cited the decisions of other boards but has not used such decisions as precedents except as the principles embodied therein have been approved by the board of arbitration.

The manufacturers, however, consistent with their opposition to the loose construction of the market agreement, were decidedly adverse to having their document regarded as a synopsis of the Hart agreement, and, as a rule, they resisted the transplantation to the rest of the market of the procedure in vogue in that house. But at the present time, when this process has practically been completed, and the workings of the two agreements are practically uniform over the entire market, the representatives of the manufacturers in the bulk of the market are alert to take note of any changes favorable to them that may occur at Hart's, and are quick to argue the market applicability of such changes.

III. Past Practice

As previously stated, the agreement specifically placed within the sphere of joint control certain aspects of the manufacturing process, such as discipline,

cutting standards, hours of labor, and so forth. However, it failed to mention certain other important aspects. The impartial machinery was under the necessity of deciding how disputes arising with respect to these other subjects not mentioned by the agreement should be decided—whether on the basis of equity, or by the application of some other principle. The boards at an early stage ruled that past practice should control with respect to subjects not mentioned by the agreement. Those boards have repeatedly ruled in their decisions that firms might continue to do what they had done in the past, but when they wished to alter past procedure, they must seek the permission of the trade board if they failed to secure the acquiescence of the union.

Perhaps the most important application of this theory has been to earnings. Let a worker once establish a certain level of hourly earnings, the firm is henceforth enjoined from impairment of that rate by transfer or by tampering with the piece rate so long as the effort applied by the worker is constant. However, under the conditions of severe depression existing in Chicago since 1923, union business agents have at times acceded to the transfer of employees at lower wages. Nevertheless, the impartial machinery has never officially recognized these violations of the principle set up by it, and Case number 243 remains the leading case on this subject. In that case the trade board ruled as follows:

> Only in very exceptional circumstances will the trade board permit a firm to reduce a wage once paid. In general, a wage may not be reduced. As Mr. Williams (the first chairman of the board of arbitration of Hart, Schaffner and Marx) once said, "The spirit of the agreement is to maintain wages whenever equivalence of service is maintained, and it does not contemplate a reduction of earnings unless effort is correspondingly reduced. If, therefore, an individual week worker is reduced, it is up to the company to show some cause why the reduction is made." This general principle the board holds to be sound.

Other important applications of the rule that past practice must prevail have been made: in the granting of vacations and holiday pay to cutters on the grounds that such concessions had been made in the past; in the allocation of incidental work outside the proper limits of their trade to cutters and trimmers; in the preservation of certain methods of dividing work, and the like. Established practice with respect to all of these points largely grew up as the result of concessions made by firms during the war inflation period. One of the most important of this group of decisions was Case number 508, in which the board ruled:

> The trade board is of the opinion that when the agreement is silent on the question of holiday pay, the question of what workers should and should not be paid in a given case should be determined by previous practice.

Rulings of this character naturally placed certain houses at a considerable competitive disadvantage with respect to houses which had not made concessions of this sort. This disadvantage continued until vacations for cutters and trimmers were abolished by agreement between the employers and the union in 1922.

Another inducement mentioned above as having frequently been extended by firms prior to the signing of the agreement was the granting of incidental work to cutters and trimmers—cutting up samples and ends for dealers, making up sample books, measuring cloth for inventories, and so forth. After the boom period of 1919-1920 was over,

these small firms wished to turn such work over to the designer or foreman, to be completed in his spare time, or to employ clerical help for this purpose. But the board forbade this reallocation of work in Case number 478.

> Let the previous practice control; let the designer-foreman do the kinds of work he has in the past, but he must not do a larger proportion of the work here in question than he has in the past.

The agreement contains a provision to the effect that work must be divided equally among all the workers in the shop. In the tailor shops, workers may be laid off at any time during the week, provided each worker has an equal amount of layoff. In the cutting room, however, the union has always endeavored to enforce the principle that layoffs must be made by weekly periods. Here, again, certain houses, which had been able to persuade the union to permit a mid-weekly layoff for a few weeks, had the advantage over firms unable to present to the trade board such a *prima facie* case in favor of allowing a mid-weekly layoff on the grounds of past practice, until the situation in this respect was altered by joint agreement in 1924.

Still other examples of restrictions upon management originating in this rule that past practice must prevail are to be found in the restrictions on the height of lay, in the fixing of production standards for cutters and trimmers, and in the failure to extend piece work to trimmers. Under the conditions of production prevailing in the ready-made branch of the industry, where sales are made to retailers, numerous orders come in for standard models and sizes. Under such conditions, production costs would be greatly reduced were it possible to pile the cloth 10 or 20 layers high, and cut the whole lot with an electric knife in one operation. But the union imposed restrictions on the number of layers of cloth that could be piled at one time. In certain other cases the union also forced restrictions upon the piling of mixed fabrics—the mixing of a serge and a striped material in the same cutting lay. Such barriers to the most efficient methods of production have necessarily raised costs.

There is also an almost absolute rigidity with respect to the production standards of cutters and trimmers. Such workers are not on piece work, but records are kept of their production, and their pay is adjusted every four weeks on the basis of their success or failure in producing a more or less arbitrary daily output. These standards of daily output differ for each house and were fixed on the basis of the past performance of the cutters by joint agreement between the firm and the union. The trade board has refused to interfere with such standards, even in the case of firms producing a considerable volume of evidence tending to show that the quality of their cutting had been lowered, or that past practice was not a fair indication of the productive capacities of the cutters. The board has refused to alter the standards, expressing its opinion in several instances that since the standards were arbitrarily fixed in the first place, it was probably better to refrain from tampering with them until definite bases of adjustment were decided upon between the firms and the union. In line with its refusal to alter these cutting production standards, the board has also refused to introduce piece work for trimmers, on the grounds that such a method of payment would be contrary to past practice. Several firms, however, have been able

to obtain permission from the union to institute piece work for trimmers. But other firms with less ability to bargain have been obliged to retain the week-work method of compensation.

Such restrictions have, of course, prevented the adoption of the most efficient production methods, and they have, therefore, increased production costs. But the houses of the Chicago market have perhaps felt more keenly the lack of uniformity with which these restrictions apply in the market itself than they have the resultant increase in costs, serious as this increase is when competing with non-union markets.

IV. Approval of Negotiated Settlements

The impartial machinery has consistently favored the adjustment by negotiation of disputes arising between the two parties to the agreement. In Case number 1067, the trade board stated:

> Any issue held to be within the jurisdiction of the impartial machinery is as proper a subject for negotiation and for adjustment by agreement as for litigation.

The trade board and the board of arbitration have been inclined to consider negotiated settlements as making for a more satisfactory working relationship between both parties than legislated settlements of disputes, no matter how wise the decisions.

Such an attitude has had far-reaching effects upon the workings of the agreement in the last few years. The spring of 1923 witnessed an increase in wage scales approximating 10%. The employers did not press for a wage reduction in 1924, but requested, rather, the abatement of certain restrictive practices general throughout the market, and for specific adjustments within each house. The union, recognizing the desperate need of the industry, made certain concessions applying to the entire market, but probably the most important adjustments were made on an individual house basis, with the representatives of each firm treating with the union. The impartial chairmen were generally present at these individual negotiations, although they acted more in the capacity of friends to each party, or of witnesses, rather than of judges, and they rendered considerable assistance in unofficially smoothing out disagreements.

The market concessions made by the union, and many of the individual adjustments, were worked out through decisions of the impartial machinery. For instance, the union agreed to some relaxation of the rule of weekly layoffs for cutters. If a firm was able to show that it would suffer a financial loss by retention of its cutters until the end of the week, the trade board has permitted a hearing and has usually granted permission to the firm to make a mid-week layoff. But no blanket rule has gone into effect, permitting such a layoff in every case.

The trade board was also instrumental in carrying into effect an agreement by the union to increase the production of bushelmen—workers employed to repair defects in workmanship or fit. Bushelmen were in most houses on week work. Piece work was introduced in a number of cases where the volume of work was sufficient to make this feasible, while in other instances workers were disciplined by the trade board for low production.

The board also materially assisted in the execution of agreements made between the union and individual houses. In a number of houses new methods of manufacture were introduced or a few peak rates were reduced, by decisions of the trade board, thus relieving the

union of the onus of making the changes. A few quality firms had secured permission from the union to manufacture a cheaper quality line, in order to compete more effectively with non-union markets. The minor difficulties connected with the establishment of such low-quality shops were often ironed out by verbal or written decisions of the trade board.

Other firms were permitted by decisions of the trade board to pile mixed fabrics. Odd sizes in linings were eliminated, thus reducing costs. Machinery was introduced to a greater extent than had been possible before, and employers were permitted to put workers on two operations on piece work. Practically all of these changes were effected by trade board decisions.

V. The Doctrine of Need

A large share of the trade board's time has always been occupied with rendering decisions in cases involving the discharge of workers. One of the cornerstones of any trade union is the protection of the jobs of its members. But the employer may feel under the necessity of discharging workers because of changes in the work, or a diminution of its volume; and more commonly, he may desire to discipline workers by discharging them. The impartial machinery has been under the necessity of preserving discipline in the shops and of seeing that the employer was not burdened by a force of workers greatly in excess of his needs, while at the same time respecting the union's necessity of protecting its members. This it has tried to do by basing its decisions in cases involving requests for reductions in working force upon an extension of an important clause of the agreement—the equal-division-of-work clause. In disciplinary cases, it has tended to base its decisions upon a new principle, commonly known throughout the market as the "Doctrine of Need."

One of the basic features of the agreement is the provision for the equal division of work. The union always bitterly contested for this principle of equal layoff, and succeeded in inserting a clause providing for such equal division in the agreement. This principle crosses shop lines—if a firm has more than one shop manufacturing the same, or approximately the same, type and quality of garment, the amount of work given each shop must be equal over the season.

In instances where a firm has had insufficient volume of work to operate a shop economically and has requested permission to close down and transfer the work to another of its shops or to a contractor, the trade board has refused to grant this permission where there was the slightest possibility of an increase in the volume of orders.

In a few cases, the trade board has found that the volume of work was insufficient to keep busy the present force and that there was no immediate prospect of an increase. In such cases the board has reluctantly consented to closing the shop, thus in effect violating the equal-division-of-work clause, which contains no provision for a reduction in force, but which, on the contrary, rules against it by implication. In return for this privilege, the employer has always been directed to make certain concessions. The board has ordered the transfer of all workers possible to other shops operated by the employer, or else the contractor has been directed to take over certain workers, if the work was transferred to a contract shop. In addition, the firm has usually been directed to make a monetary settlement

upon all workers for whom a place could not be found.

For instance, in Case number 351:

> The practice of the market and all trade board and board of arbitration decisions bearing upon this matter have been to the effect that some degree of responsibility has been developed for all union workers brought into the trade and employed by a firm so long as the firm continues to manufacture clothing. The reasons for this need not be repeated here. In some cases it has not been practicable to continue all in employment, but where it has not been definitely shown that it is impracticable to employ all union workers when a section or shop is being closed, the firms have been held responsible for continuing them in the shops where they have been employed, or for employing them in other shops and giving them a fair share of the available work.

The right of the trade board to grant extra pay to the workers discharged in Case number 201 was appealed to the board of arbitration. This board upheld this idea of the firms' responsibility for the workers they employed, and the consequent broadening of the equal-division-of-work clause.

The "Doctrine of Need" was developed at an early stage by the trade board as a supplement to the principle of equity in its settlement of disciplinary discharge cases. This principle was to the effect that the results of discharge to the worker and his family must not be disregarded.

This theory found expression by the board of arbitration in Case number 1203*a*, where the board stated that it considered the following factors in the discipline of workers:

> What will be its "job effect"? Will a discharge in all probability bring him immediately a new job at higher wages? In some cases the undersigned has reinstated a worker with loss of time because discharge would have been no effective punishment. In other cases he has done the same thing because discharge would have left a worker with dependents without work for a week.

Although such an application of the "Doctrine of Need" was specifically nullified by agreement between the employers and the union in 1922, it has nevertheless apparently been employed since that time by the trade board in settlement of the disciplinary cases coming before it. The first half of 1923 was a period of good business in the Chicago market, while the corresponding period of 1924 was a period of probably as severe depression as any in recent years. During the first period mentioned, a total of 58 workers came before the board in cases involving the review of the disciplinary action of firms. Of these 58 workers, 31, or 53%, were ordered discharged, and 21, or 36%, were reinstated without pay for time lost. The remainder were given credit in connection with layoffs for the time lost, or were reinstated with pay. From January 1, 1924, to June 30, 1924, 54 workers came before the board, charged with offenses presumably as serious as those whose cases were reviewed by the board in 1923. Of these 54, only 12, or 22%, were discharged, while 35, or 65%, were reinstated without pay. In other words, a decrease in the proportion of discharges of about 60% from 1923 to 1924 is shown. This decrease is especially striking when one considers that in times of depression workers are more circumspect with respect to the quality of their work and their conduct, and accordingly it is to be presumed that the workers coming before the board were hardened offenders, or the habitually careless or inefficient.

VI. The Workability of the Agreement

In certain cases, the trade board's acceptance of jurisdiction, or its decisions in those cases, has seemed to be

based upon a recognition of the necessity of moulding a workable agreement, rather than upon equity, past practice, or Hart, Schaffner and Marx precedents. In Case number 1213, the board ruled that "if the agreement is to work, it (the impartial machinery) must accept jurisdiction in disputes that arise under the agreement and are not disposed of by the parties in interest."

Rulings in certain other cases were apparently made on the basis of expediency. In Case number 424, the firm refused reinstatement to a worker until he had recompensed the firm for damages to a coat. The board ruled as follows:

> The trade board in several instances has advised against the imposition of fines by a firm and now officially rules against it. It does so first of all and chiefly on the ground that this form of discipline lends itself so easily to abuse that it becomes improper. Frequently fines are used as a device to undermine and reduce wages.

It will be noted that the chief basis for this ruling was that it would be inexpedient to permit the use of fines by firms as a form of discipline—not that fines were forbidden by the agreement. Another case of the same sort involved the discipline of a shop chairman. A conference of the personnel managers of the manufacturers had expressed the opinion that it was good policy to prefer charges against shop officials before the trade board, rather than to proceed against them with direct discipline. But in certain cases coming before the trade board, this expression of opinion was made the basis for formal rulings, and in at least one instance the failure of a firm to follow this mode of procedure that the trade board had approved of as expedient was made the sole basis for the reinstatement of a delinquent shop chairman.

The trade board's refusal to classify the shop chairmen of cutting and trimming rooms has apparently been based upon the board's desire to preserve a smoothly working relationship. It has already been pointed out that the cutters are on production standards—in effect, a form of piece work. Collection of union dues, the settlement of minor disagreements, and the performance of other union duties, naturally lowers the production of the cutting-room chairmen. In the tailor shops, the union itself reimburses the shop chairmen for time spent on union duties. But in the cutting rooms the trade board has always disregarded the production of shop chairmen in fixing their wages, and, as a consequence, the firms have been obliged to bear this burden of slack production. In spite of an agreement between the employers and the union to discontinue this arrangement, the board of arbitration has refused to sanction a blanket change in the system, although the trade board has endeavored to raise the production of shop chairmen in individual cases.

Another very important result of the impartial machinery's determination to make the agreement work has been the tendency to relate the nature of their decisions to fluctuations in the business cycle. In the preceding section it was pointed out that the severity of disciplines fixed by the trade board in cases coming before it for review has apparently depended upon business conditions.

It is difficult to point out specific cases and say with any degree of certainty that the decisions in those individual cases were influenced by the prevailing business conditions. It is only in a series of cases of the same type, where it can be assumed that other factors were fairly constant, that this tendency to relate the nature of the decisions to

business fluctuations is evident. A group of disciplinary cases offers this uniformity. And cases concerning the classification of cutters also present fairly uniform basic conditions.

Reference has already been made to the methods used in fixing the pay of cutters and trimmers on the basis of their production for the four preceding weeks. In the early days of the agreement, when the arrangement was first devised, considerable leeway was allowed in meeting these standards. In other words, a cutter might fail by a considerable margin to produce the standard, and still receive his same wage. But largely through the efforts of the trade board during the 1923-1924 depression, this laxity has generally been done away with.

In one case, the board of arbitration specifically mentioned the business prospect as the basis for one of its decisions. In the spring of 1923, the employers requested permission to take on cutters' apprentices. In view of the prospect for a decline in business, the board ruled that the needs of the employers should be satisfied by the transfer of a limited number of trimmers to the cutting room.

The wage awards of the board of arbitration have, of course, followed the fluctuations of business conditions during the business cycle to a considerable extent. A wage increase in December, 1919, of approximately 20% was granted, but the request of the union for another advance in May, 1920, was refused. Wages were cut approximately 10% in May, 1921, and they were advanced by about the same amount in May, 1923.

VII. Conclusion

A comprehensive view of the six principles outlined on preceding pages seems to indicate clearly that these principles have all been developed by the impartial machinery with the idea in mind that they would result in the development of a satisfactory working relationship between the manufacturers and the union.

One of the first decisions of the impartial machinery was to the effect that the terms of the agreement were to be loosely construed. In this fashion, the way was left open for such modifications of and additions to the terms of the agreement as later experience might find necessary.

Furthermore, the boards ruled that the market agreement was a synopsis of the Hart agreement and that all decisions of the Hart, Schaffner and Marx Board of Trade were applicable to the balance of the market. A process of trial and error had worked out the surest procedure to be followed by the trade board at Hart's, and while certain adjustments necessarily had to be made to transplant the procedure in vogue at this house to the bulk of the market, nevertheless this transposition was a comparatively simple matter.

The trade board further ruled that past practice was to apply in the market, unless such practice was modified by joint agreement or by decisions of the trade board. In this fashion the dangerous innovation of revolutionary changes in procedure was obviated, until such time as absolute necessity forced the issue.

The trade board has also placed its stamp of approval upon negotiated settlements, as making for a better working relationship than decisions of a third party, no matter how enlightened those decisions might be. In this connection, the board has often assumed the burden of carrying into effect, by its decisions, the understandings privately reached between the parties to the agreement, thus

relieving the union of the onus of making concessions.

The defense of a cardinal principle of trade-unionism—the protection of members' jobs—led the impartial machinery to formulate the "Doctrine of Need." Under this principle, members of the union were protected in their employment, even in the face of drastic reductions in the volume of work. Furthermore, the trade board has tended to discipline by methods other than discharge in times of business depression.

The above five principles have in general guided the boards in the formulation of their decisions. But underlying all those decisions, and perhaps more fundamental than any of these principles, has been the determination to mould a working relationship. This has been demonstrated in the acceptance of jurisdiction by the trade board in certain cases on the grounds of expediency, and by a general tendency to relate the nature of its decisions to fluctuations in the business cycle—a process of tempering the gale to the shorn lamb.

It cannot be denied that mistakes have been made by the impartial machinery—some serious. Some of the chairmen have undoubtedly been hampered by a lack of foresight or courage. But the severest critics of the workings of the agreement cannot deny that a working relationship between the two parties does exist in the Chicago market, and that this relationship bids fair to continue.

SOME IMPRESSIONS OF THE BRITISH TRADE ASSOCIATION

By EDGAR L. HEERMANCE

THE British business man has been an individualist. He preferred to carry on in his own way, and let his competitors carry on in theirs. The business had been in the same family for two and often three generations. The *laissez faire* philosophy of the early industrial era stamped the nation with a tradition of independent action. A similar individualism characterized the American business man up to the present century, as a result of pioneer conditions. And the British manufacturer or trader had been a pioneer. For about a hundred years he kept one or two laps ahead of his competitors in other industrial countries. He was living on the frontier of industrial development, where conditions called for individual responsibility and initiative, rather than for collective action.

I. General Causes of the Organization Movement

In the majority of British industries, the first pressure toward organization came from the labor unions. About 1875, labor had begun to reach a degree of strength which forced employers to organize, first on district and later on national lines. The directory of the Ministry of Labor lists some 863 district and national associations, or federations of associations. They are headed up in the National Confederation of Employers' Organizations, which corresponds to the National Trades Union Congress. In many cases very satisfactory relations have been established. The boot trade, for example, has not had a strike since 1895; in iron and steel the sliding scale of wages, based on prices, has produced a similar record. But the average British business man, while he accepts the union just as he accepts the income tax, appears to be obsessed by the labor problem quite as much as his American counterpart. He gives it a place in his emotional life larger than is either necessary or wise.

Many of the associations originally formed to deal with labor questions have since taken on other functions. In other cases they have paved the way for parallel associations along commercial lines, with practically the same membership. It has proved easier to bring competitors together on labor questions than on commercial questions. If an association handles both, the former will bring out a larger attendance; individual competition is not in this case a barrier between the members. The sense of common danger, however, does not necessarily mean a recognition of common interest. It may be more difficult to bring British business men together along commercial lines, but when this can be done it probably creates a stronger and more permanent bond.

A second cause of organization was price agreement. This will be discussed in more detail at a later point. It appears to have gone on sporadically since the beginning of the industrial era, even before the repeal of the laws against combination. Many groups of competitors were first brought together in this way. Price fixing in itself is not a very

satisfactory basis for association. It is likely to generate a good deal of suspicion and bad feeling among the members. And in the past it engendered in the public mind a certain hostility toward the trade association, as a secret arrangement for gouging the consumer.

The third factor in the uniting of competitors was the sense of a common commercial interest. Organizations have existed in the coal and cotton trades for over a century. The Coal Tar Association goes back 50 years. The Federation of Grocers' Associations was formed in 1881, at which time there were 22 local bodies in existence. But these are rather exceptional cases. Few of the associations which I have checked go back farther than the present century. The British business man has been even harder to organize than the American; an older civilization had produced more fixed habits and traditions. But there was the same atmosphere of hostility and suspicion to be broken down. This feeling soon died out, however, with better acquaintance. The trade association has had the same effect as in America in building up confidence and social solidarity among men who before were intensely independent.

II. The Post-War Development

By 1914, a large number of trade associations, in the strict sense, had come into being. The majority of them were small and not particularly aggressive. The secretaries, who sometimes were their promoters, were apt to be either solicitors or accountants, routineers rather than executives. Quite a number of these bodies were fathered by the chambers of commerce in London, Birmingham, and Manchester, which provided their secretariat. Some of the stronger groups, formed in response to the growing intensity of competition in British trade, were still young and feeling their way.

The effect of the war is seen in a number of directions. In order properly to ration raw material and fuel, the government encouraged the formation of trade associations where none existed. While many of these organizations were mushroom growths, in other cases cooperation is apparently permanent. The new conditions of competition worked in the same direction. The British manufacturer found himself fighting for his share of world trade. Tax burdens, new government regulations, increased foreign tariffs, and the danger of dumping from abroad, made it necessary for each industry to act as a unit for the protection of its interests. This has meant a marked strengthening of the trade organization movement. The chemical industry supplies a typical case. Practically no organization existed prior to the war, outside of the coal-tar group. The Association of British Chemical Manufacturers came into being in 1917. It has in turn grouped its members into various trade associations, corresponding to the divisions of the chemical industry. The function of the general body is to do the thinking for the trade as a whole. And for organizations of this type the tendency has been to supersede the routine secretary by a high-salaried official, usually called director or manager. The man chosen for this post had often proved his capacity by executive work during the war.

The business man himself at first accepted the new cooperation as a matter of necessity, though with great reluctance. Then followed a period when he was ready to pay the rather heavy dues, because he was making money and some of it might as well go to the association instead of to the government as an ad-

dition to his income tax. By 1922, the trade associations began to be accepted as worth while in themselves. The business man has been making less money than in the years just after the war. But membership in the more aggressive type of association has steadily grown.

There has also been a change in public opinion, as reflected in the attitude of the government. Trade associations, as we have already noted, proved their value during the war period. They have been investigated by a series of government commissions, from 1918 to 1926, and their reports may be described as increasingly favorable. The old suspicion has largely subsided, and cooperation between competitors is now regarded as a necessary piece of trade machinery. This parallels the change of attitude in our own country during the same period.

III. The Federation of British Industries

The strongest trade organization in Great Britain is the Federation of British Industries, organized in 1916 and given a royal charter in 1924. It is exclusively British (which means the Empire) and confined to manufacturers. This in itself suggests the acute competition from foreign-made goods which British factories have been facing; the distributor in England may not have the same interest in home or dominion products. A further distinguishing feature of the F. B. I., as it is generally called, is that it is purely commercial in scope and takes no part in labor questions. It claims to be the largest organization of manufacturers in the world. Membership is both associated and individual. At the close of 1926, it comprised 185 trade associations, including most of the important manufacturers' organizations in Great Britain, and 2,271 individual members. The dues are substantial, ranging from $100 for a firm employing 100 hands, to $1,000 for one with over 2,000. Thus the federation has ample funds to work with. Its staff impresses one as being of extremely high grade.

The first function of the F. B. I. is to present a united front for British manufacturers on national questions. Primarily this means laws, present or prospective. There is nothing in Great Britain corresponding to the American lobby in its palmy days. When a question arises which affects British productive industry as a whole, or some important section of it, the case is digested and put in its proper form by the federation's committees and staff. It is then brought before the government. As the federation not only speaks for British industry but may have 40 members who are also members of Parliament, it naturally is listened to with considerable respect. In fact, it is frequently consulted by the ministers on questions of policy, notably by the late Labor Government, which was rather inexpert on trade matters. The cases handled may have to do with oppressive burdens or inequalities in taxation. They may involve railway tariffs, or foreign trade embargoes, or the details of a new bill for factory regulation. If a particular industry feels that it is being crippled by dumping from abroad, the F. B. I. may request that it be given the special protection provided under the Safeguarding of Industries Act. It is largely responsible for the new Cinematograph Films Bill; in fact, it was instrumental in organizing the film manufacturers into an association. The federation does not always win its case. Though working on nonpolitical lines, it is largely Conservative in color, and may

accomplish more with the present government, which is virtually protectionist. The pressure which it exerts might conceivably be abused. But thus far the legislative phase of its work appears to be a legitimate presentation of the interests of British manufacturers.

A second function of the organization is to facilitate export trade. British industry depends very largely on the over-seas market. With foreign customs rates and regulations changing from week to week and the exchange fluctuating day by day, the manufacturer must have some prompt and reliable means for posting himself as to conditions. For such information the F. B. I. has become a general clearing house. In this it suggests a more elastic and responsive edition of the United States Department of Commerce. The federation maintains its own foreign agents, who are virtually consuls, and drummers on a national scale. It tells the British exporter what goods to ship and how to ship them. In the good old days, if a Chinese buyer wanted a shipment of scissors wrapped in red paper instead of green, the manufacturer would probably offer to go to perdition first. The German manufacturer, making a poorer grade of scissors, would agree to wrap them in red, and get the order. Today, thanks to the F. B. I., the Englishman, seeking to regain his trade, will wrap his scissors in red, too, because red is the lucky color in China and the people prefer it.

The third general function of the federation is to bring expert advice to the members on their business problems. Such service runs all the way from economy in fuel consumption to research as to supplies of raw material. In this field, except as a means of liaison between the manufacturer and various technical organizations, the F. B. I. is in danger of spreading itself rather thin. It does, at least on paper, a good many of the things which with us would be done by the trade associations themselves. There is temptation as well as strength in the possession of large funds with which to hire expert talent.

IV. Credit Bureaus

While some trade associations, as well as chambers of commerce, have attempted credit and collection work for their members, most of the "status enquiry," as it is called, is handled by the trade protection societies. The movement began early in the nineteenth century, the Manchester Guardian Society of 1826 being probably the earliest. An association of the local secretaries, formed in 1848, became in 1865 the National Association of Trade Protection Societies, now numbering 68, with a total of over 35,000 members. Clearances of credit information, however, are handled chiefly by the London Association for the Protection of Trade. This most efficient body, which dates from 1842, was for the first 30 years confined to retailers. Its field gradually extended to manufacturers and wholesalers, both firms and associations. As a mutual society, the association is protected in its credit interchange against that ever present British bugaboo, the law of libel.

Here again the close of the war brought a marked internationalizing of the problem. Competition with foreign producers had become more acute, both at home and abroad. The old-time credit man, who from long dealing with established firms developed a certain instinctive credit sense, had largely given place to new and inexperienced managers. Mushroom business firms were to be found everywhere. And almost

everywhere the established habits of trade ethics had been seriously undermined. In each nation, it was more important than ever to know with whom it was safe to deal abroad. The London association had long maintained correspondents in foreign countries. It made the interesting discovery that other nations had been developing their own central bureaus or general credit clearing systems. Affiliation of these central bodies was a natural step. As a result, credit information is rapidly becoming international in scope. On the morning of my first visit, for example, the secretary had just received a cable from New York, asking about a woman who claimed to be a niece of the Duke of Richmond. Was she good for a credit of £50? He was able to reply at once that there is no Duke of Richmond at present in existence. The affiliated agency in the United States is the Retail Credit Men's National Association. Our merchants are now able to draw on the information which the London office has accumulated as to the credit standing of some 7,000,000 persons or firms in the British Isles.

V. Arbitration

The use of commercial arbitration began with the organizations of brokers. The London Corn Trade Association, which is rather typical, was formed 50 years ago to regulate grain trading by the adoption of uniform contracts and the arbitration of differences. There are now some 45 different contract forms for various countries. Membership is international, about half being outside of Great Britain, including all important foreign firms, with the present exception of Germany. Practically all the grain trading of the world is done under these rules. In case of a dispute, usually over the question of whether the established grade called for by the contract has been delivered, each side appoints an arbitrator. This means a British grain merchant of long experience, since all arbitrations are held in London. On any business day one can see a number of such pairs of experts mulling over samples. If they cannot agree, which happens in about 40% of the cases, they appoint an umpire. Appeal is possible to the committee on claims, and from them to legal review. Only about 2% of the cases go to the courts. The costs in each case are paid by the loser.

The United Tanners' Federation, a war baby but a very sturdy one, was instrumental in assembling an international conference of this trade in July, 1926. Later in the year, the organization was made permanent in the form of an International Council of Tanners. The most important result has been the Universal Hide Contract, which is now in operation between shippers in all important countries. It contains provisions for arbitration.

From the brokerage and importing groups, arbitration has been extending steadily into other forms of industry. The trade associations have encouraged uniform arbitration clauses in the contracts of their members. But instead of setting up their own machinery, the dispute is usually referred to one of the arbitration courts established by the larger chambers of commerce. The most important of these courts is the one maintained jointly by the London Chamber and the City Corporation. The London Chamber, which represents directly or indirectly over 150 trade associations, has taken a leading part in the promotion of arbitration between merchants in different countries. The chief practical difficulty seems to

be a moral skepticism. Continental business men, in general, do not trust the impartiality of a foreign tribunal. Other factors may enter, but it is probably fair to take this as reflecting the relatively lower level of commercial honor in foreign countries. For a century or more, the British trader has maintained a remarkably strong tradition of honesty and fair play. The origin of this tradition is one of the unsettled questions of economic history.

VI. Cost Accounting

Costing, as they term cost accounting in England, has been spreading among various associations. I found it established in industries as wide apart as paint and cold-rolled brass. The outstanding example is the Federation of Master Printers. In 1911, certain leading printers, who had studied the work done along this line by the United Typothetae in the United States, arranged what might be called an evangelistic convention to spread the idea. Something more than enthusiasm proved to be necessary. The federation, which had been organized ten years before on labor lines, worked out a costing plan adapted to British needs, and added a staff of experts to teach and install it. The system is now taught in various schools, so that a constant supply of trained cost accountants is available. This educational campaign has undoubtedly done a great deal to put printing and allied trades on a sound business basis and to improve competitive relations. There is still a good deal of price cutting. Some of it is deliberate, due to the effort of certain large firms to build up volume. Some is due to ignorance; the small printer, whose ranks are constantly recruited from the journeyman, is still likely to base his prices on experience rather than accurate costing. Many printers, particularly the older men, cling to the earlier secretiveness. Witness the mild astonishment which spread over one of the London group meetings, two years ago, when a member announced that he was going to describe frankly his own methods and ask for criticism and suggestion. But on the whole, the new idea of open dealing has been accepted.

The Federation of Master Printers has also been active in the movement for standardizing paper purchases, and in this it has been joined by the wholesale stationers. Up to 1925, paper was sold by the ream, which might run anywhere from 472 to 516 sheets, according to the class of paper. The printer wasted a good deal of time in estimating and counting the number of sheets required for a given job. Purchases are now to be made, or at least are recommended, on the basis of 1,000 sheets, and packed in thousands, reams of 500, or packages of 250. The initiative in this movement came from the Stationery Office, which is the largest user of book paper and requires the new standard in the tenders which it receives.

VII. Statistical Work

The British trade associations have been backward in statistical work, as compared with those in the United States. Many of the leaders are convinced that the reporting and distribution of production figures would be the most effective way of stabilizing the market. But the British manufacturer is extremely reluctant to disclose the facts regarding his business. Probably the best work is being done by the Boot Manufacturers' Federation, which has issued monthly reports for the past three years. About 75% of the 500

factories are participating. This record is the more remarkable, as the average member has worked up from the ranks. Other outstanding examples of statistical work are the National Federation of Iron and Steel Manufacturers and the United Tanners' Federation; in both of these the directors are trained economists.

VIII. Resale Price Maintenance

English law permits the maintenance of resale prices by means of a boycott. The most successful attempt is the Proprietary Articles Trade Association, organized 30 years ago to combat price cutting in the retail drug trade. It now includes between four and five hundred manufacturers, as well as all the important wholesale distributors. Over 5,000 proprietary articles are controlled. The council of the association, on which retailers are also represented, sees to it that the prices submitted by the manufacturer are adequate to insure a safe profit to both the wholesale and retail trades. The articles are then placed on the "protected list," which is sent to all chemists (retail druggists) in the United Kingdom. Any trader who persists in cutting prices is placed on the "stop list." The manufacturers and wholesalers are pledged not to supply him with goods. The result is that the minimum retail prices are maintained in this field on practically all nationally advertised articles.

A Grocery Proprietary Articles Association, on the same lines, has been in operation for four years. Its success appears to be doubtful. The chief reason it cannot be made to work is that it would cut off the food manufacturers from the cooperative stores, with nearly five million members, which are one of their best outlets. In fact, the manufacturers may derive positive advantage from price cutting. For example, the confectionery trade in the West End of London was formerly controlled by the manufacturing retailers. The wholesale manufacturers could not break into this market. Now, however, an opening has been made by various price cutting stores. The margin allowed the retailer, sometimes as high as 50%, is large enough to permit price reduction where there is a rapid turnover, though for that matter the same is true of the chemist who is so carefully protected.

Another method of accomplishing the same result is that of the Electric Lamp Manufacturers Association. This small but extremely efficient group is interesting in a number of ways. It is popularly known as the Elma, as distinguished from the larger body, the Bema (British Electrical Manufacturers' Association), with which it is affiliated. Both are postwar developments. The Elma has a monopoly of the electric lamp industry in Great Britain, and formal or informal agreements with the large manufacturers in Germany, Holland, and the United States. This means the exchange of patents, old and new, and respect for the prices and territory of foreign lamp makers within the circle. They are quite open about their monopoly of the market. As the policy has been to reduce prices in order to sell more lamps, there appears to have been no public protest. The members not only exchange patents but experience, and are free to visit one another's plants, something which is still rather unusual in England. Prices are set by agreement among the manufacturers. The association then becomes a party to the maintenance of these prices. Wholesalers and retailers who sign a resale agreement are given a preferential discount, which varies from 22% to

33⅓% according to quantity. Violation of the agreement does not cut the dealer off from the right to purchase, but merely from the benefit of the differential. He may handle lamps from any members of the association, or from abroad if they are obtainable. Anyone is free to buy lamps for resale, but because of the differential about half of the dealers in Great Britain have signed the agreement.

The Federation of Timber Merchants, troubled with the problem of direct importations by retailers or large consumers, has concluded an agreement with the Swedish and Finnish producers' associations. Lumber will be bought only from members of these groups. They in turn agree to ship only to regularly listed "importers" in Great Britain. These need not necessarily be members of the federation, but the latter makes up the eligibility list.

IX. Price Agreement

There is said to be less agreement on prices in British trade associations than at any time in recent history. This may be due in part to slack business conditions, which make it harder to hold members to an agreement of this sort. There is certainly less of it than we have been led to suppose. Two different men, with wide viewpoints, made the statement (probably exaggerated) that there is more price fixing in America, where it is illegal, than in Great Britain, where the manufacturer for all practical purposes has a free hand. Except for a vague and long unused rule of the common law against agreements in restraint of trade, there is no way of stopping such practices. Price wars have come to be regarded as expensive both for the public and for the participants. But formal agreements and the pooling of the market are usually attempted only by associations with a small membership. These, however, may represent large firms which dominate the industry, as in the case of electric cables and cast-iron pipe. In almost every instance there are important firms outside the pool.

Men in the price associations talked freely when they understood that their disclosures would be considered confidential. This secrecy is not due to a troubled conscience, but to fear that the information would be a weapon in the hands of their customers. The psychology of the situation is interesting. In times of cutthroat competition among manufacturers, the wholesalers ask why they do not get together to stabilize the industry. When they do get together, the wholesalers complain of the "ring" and do their best to break it up, since they are no longer able to play one manufacturer against another. To illustrate the need of privacy, an American importation, the Abbey Club, flourished in the printing trades for ten years prior to the War. This was an attempt at price fixing, by which the first member filing a tender with the secretary received the preference, the other members bidding higher. The scheme broke down because it could not be kept secret. A customer would ask a printer whether he were in the Abbey Club, and he either had to lie or lose the order.

In many cases, particularly in the specialized metal trades, the price agreement appears to be working smoothly, and has undoubtedly saved the industry from the demoralizing price cutting which preceded it. The insider is generally well satisfied with the plan. The chief criticism of the unbiased outsider is that it tends to put a premium on inefficient management. The price must be set high enough to enable the least

efficient member to make a profit. When slack times come, the stronger firms, which are in a position to reduce prices, are handicapped by the agreement. These observers point out that the same result could be secured by uniform costing, the sharing of production and price data without any attempt at formal agreement, and aggressive research work by the association to improve products and methods.

The price associations which have survived are those which have taken into account four types of potential competition: from foreign producers under a free trade system, from the use of substitute products, from manufacturers who develop their own subordinate plants, and from new domestic firms entering the field. The wrecks which strew the shore are of those which failed to take these factors into account and set prices too high. While I was in England, one of the most ambitious schemes, that of the Light Castings Association, broke down. Competition of foreign products had come to be so keen that it proved impossible to keep up the home price.

In the Federation of Master Process Engravers, prices are set, like wages, by a joint council of masters and men. The penalty for breaking the price schedule would be that the firm's employees would walk out. The members are making a profit, which was not true in the period of indiscriminate price cutting which lasted until 1917. But as they have a practical monopoly of the market, one wonders whether the consumer is adequately protected.

X. Research, and "Mobility"

Since 1918, 28 cooperative research organizations have formed, as adjuncts to various trade associations. This was largely in response to the government's offer of a pound for pound subsidy during a five-year period. The total amount subscribed by member firms has run about $500,000 a year. The largest annual budget, that of the Cotton Industry Research Association, is $225,000, including the subsidy. This is devoted to fundamental rather than immediately practical investigation. About 60% of the trade are subscribing. The average industry is not likely to exercise as much patience and faith as this in waiting for results, especially in a period of reduced income. In general, the five-year period is proving too short to establish the value of cooperative research work, and the grants are being extended at a diminishing rate.

To hold or regain his historic position in industry, the British manufacturer must be in a position to sell better goods than his foreign competitors at a reasonable price, or the same grade of goods at a lower price. This cannot be accomplished either by veiled protection, or by Empire preference, on which the present government has, with some difficulty, spent a million pounds of the taxpayers' money for advertising. As the Balfour Committee on Industry and Trade points out, in the latest volume of their voluminous report, the future depends on the development of "mobility," the power of adjustment to new conditions of world competition. The history of the trade association movement during the past decade suggests the extent to which the British business man is capable of change. He is moving in the direction of associated effort and increased efficiency. In many cases he is moving rather rapidly.

THE FORD STORES— A NEW DEPARTURE IN RETAILING

By JOSEPH E. SHAFER

I

TWO things serve to show the importance that the Ford commissaries have attained in metropolitan Detroit in the retailing of groceries, meats, drugs, and staple items of shoes and clothing. The first is the rapid growth and immense size of the stores themselves. Beginning on a very small scale in one corner of the Highland Park plant, where sugar, potatoes, and apples were sold to employees during the inflated price period of 1919, the commissaries have grown to their present size and in 1926 did a business of about $12,000,000 with a net profit of approximately $400,000.[1] The original store has, of course, been greatly expanded. And in addition, a second store was opened in the Fordson plant on August 26, 1926, while yet a third store was established in the Lincoln plant about the first of 1927. Because of the dates of their opening, neither of these latter two stores figured markedly in the $12,000,000 of sales of 1926.

The importance that these commissaries have attained is shown, secondly, by the opposition that grew up against them. As they became more and more a factor in competition, the small independent retailers of groceries, meats, drugs, shoes, and dry goods actually banded together to protest. Most effectively these retailers boycotted the use of other Ford products, both for themselves and for those from whom they bought their supplies. Their protests and their boycotts probably were influencing factors in causing the Ford Motor Company again to exclude the general buying public after April 18, 1927.

And the unusualness of the growth of these commissaries is attested by the fact that they have grown entirely from consumers' demand. No means were ever used to draw the public. No expenditures have been allocated to advertising, sales, "loss leaders," or their like. Buyers came out of their own desire to purchase goods of first quality at comparative savings. In fact, the general public forced the doors of the stores open to their use by the widespread practice of borrowing store passes from employees. The admission of the general public without qualifications was largely formal recognition of existing facts. And, finally, it was the overcrowding of the stores—in spite of their increase in number and size — that proved to be a second reason for the Ford Motor Company again to exclude the buying public.

It is the purpose of this paper to analyze the business practices involved in the operation of the Ford stores.

II

As a basis, the Ford stores create and are founded upon a novel principle in the field of retailing. For many years groceries, meats, drugs, and to a lesser degree staple shoes and dry

[1] Taken from a letter by Mr. E. G. Liebold to Mr. L. F. Padburg as quoted in the *Detroit News* of April 5, 1927.

goods, have been thought of as "convenience" goods. As the theory runs, such goods are considered to be standardized, familiar, and of easily recognized qualities. Moreover, they are usually purchased in small quantities. And widespread competition prevents any marked variation in price. Also, such goods usually are desired for the satisfaction of immediate wants that will not admit of delay. Therefore it has been concluded that stores retailing such commodities must be located convenient to the point of consumption. Convenience in purchase is held to be primary. For the sale of such goods it is thought that the stores must be brought to the buyers in the residential districts.

Yet the Ford stores operate upon a principle exactly opposite to this. Instead of taking the stores to the buyers, they, through the attraction of 25% to 30% savings, depend upon attracting customers, in spite of their locations. They depend upon selling in quantities rather than one item at a time. The average purchase by each customer during recent months has been $2.78. And the success of the stores proves that the housewife can be led to plan far ahead. In the light of this new experience it appears that buyers can be drawn long distances to the store, even to purchase convenience goods, when the attractions of high quality at low price are sufficiently great. And the economies in the operation of the stores made possible by this new freedom of location are in turn sufficiently great to make the prices attractive.

III

It remains now to analyze the economies which enable the Ford stores to give greater values — to increase the workers' real wages.

Acting upon this novel principle of drawing the buyers to the stores, rather than taking the stores to the buyers, the Ford commissaries have incorporated many of the best features of other retail systems. There are resemblances in them to the chain store, the department store, the mail order house, and the five-and-ten-cent store systems. Yet the Ford stores omit certain features of these systems and add still other economies. The retail system evolved seems to excel any other in its economy.

In economical retailing, one's first thought is probably that of purchasing. The chain stores have made purchasing power an outstanding consideration. Here, too, the Ford stores obtain an advantage over the small retail merchant. With sales of $12,000,000 in 1926 for the three commissaries in Detroit, they have a very large purchasing power. In many cases, about 30% of the total, the stores buy directly from the producers. The percentages vary, of course, for the different types of commodities bought. Some 40% of the groceries, 50% of the drugs, 10% of the dry goods, all the shoes, and all the meat are so purchased. However, shoes and meats are customarily sold to all dealers in this manner. The remaining percentages of the various classes of commodities pass through the same hands as in going to the independent merchants. But even here the Ford stores command an advantage because of steady quantity purchases and because of bulk discounts. The Ford stores enjoy a real advantage over the average small merchant in purchasing. Yet their economies in this respect scarcely compare with those of the chain stores. Actually, the total of $12,000,000 of gross sales in 1926 divides itself among 51% of groceries and drugs, 31% of meats, and 18% of shoes and dry goods. The total volume

of purchases of groceries is small when compared to the aggregate purchases of some of the chain store systems. These latter buy almost all their merchandise directly from the producers. Economies in purchasing power are secondary for the Ford stores; it is rather in the economies in their operation that the greatest advantages are realized.

The most important of these internal gains is doubtless that of the use of land and buildings. As mentioned heretofore, the stores have liberated themselves from the necessity of locating where the patrons have easy access; instead, they work on the principle of drawing the buyers to the stores. This has enabled them to be located on sites much less valuable than is usual for such stores. It has further enabled them to occupy buildings of less attractiveness and greater utility. Thus they are able to realize a considerable saving in both land values and the value of buildings used. As the accounting is done, each of the Ford stores pays a rent figured as a proportion of the floor space of the Ford plants as a whole. They appear to be fair and reasonable rentals for the locations and buildings used. Yet only .35 of 1% of the gross sales of the Highland Park store were absorbed by the item of rent during the last six months of 1926. Nor was the rent even as large as that on sales in some departments of that store. In groceries and drugs, a bit less than .28 of 1% of the sales went into the payment of rent; in meats, something less than .24 of 1%, while for shoes and dry goods the rental cost rose to a little less than .78 of 1% of the gross sales. To be sure, some of this economy in rent grows out of the amount of business done and the high rate of turn of the stock. Yet much of it accrues from the savings in the rentals of land and buildings used.

No other retail system, with the exception of the mail order house, is able to make a gain comparable to this. In all cities some locations are termed "wholesale" or "warehouse" while other sites are good "retail locations." Invariably the retail site is more valuable and rents at a higher figure. And even the chain stores find it necessary to utilize those more valuable retail locations in establishing their systems. In contrast to the others, the Ford stores utilize land and buildings of the warehouse and wholesale type and value. In this, as in many other respects, these new stores appear as large wholesalers who are breaking the quantity packages and are selling directly to the consumers.

A second gain, growing partly out of their new freedom in locating and partly from their concentrated or mass retailing, is the possibility of combining warehouse with retailing establishment. Each of the Ford stores is forced to do this by the very fact of its tremendous volume of business. Much cartage and handling, usual for ordinary stores, can be eliminated. The warehouse and the retail store become one and the same. Here, again, the Ford stores remind one of wholesale rather than of retail firms. At least, they combine the wholesale and the retail establishment, eliminate some of the waste motion in the dual system, and effect great economy thereby.

Not even the chain store systems realize any such economy as this. They, too, are confronted with the necessity of maintaining their own warehouses and of distributing their commodities to their own stores over the city. In this respect the Ford stores are comparable only to the mail order house.

A third major means of marked economy is that of the elimination of special

services and accommodations. There are no charge accounts, and there is no delivery service. If one can here buy high-grade wares at from 25% to 30% saving, he can well afford to pay cash and carry his own purchases. The automobile has made the conveying of one's own purchases more readily possible. As for the elimination of charge accounts, the economy made possible is passed on to the buyers in the form of lower prices. With a schedule of prices 25% to 30% lower, a buyer could soon save a fund as large as the corner grocer and neighborhood butcher would be willing to charge to his credit.

Yet the Ford stores do not gain over the chain store, the mail order houses, and the five-and-ten-cent stores in the elimination of such services and accommodations. They, too, operate customarily upon these same principles.

A fourth account in which the Ford commissaries effect an economy is that of labor costs. This economy does not flow from a lower wage rate. Rather it results from a much greater division of labor than is ordinarily encountered. Those working as clerks work continuously as clerks and do nothing else. Behind the shelves and in a portion of the warehouse, others are busy continuously at weighing into standard packages prunes, potatoes, raisins, beans, brown sugar, soap chips, and so forth. In the meat market, the butchers waiting upon the public seldom need to take more than one stroke of the knife or cleaver to obtain the required amount of a piece of meat. All butchering, even to the cutting of steaks and chops, is done by others at work in the coolers just behind the clerks' aisle ways.

Nor are the clerks the stock suppliers. Two or three butchers are continuously occupied in replenishing the meat supply in the refrigerator counters. Two men are busy behind the grocery counters pushing the remaining stock forward and filling new stock in at the rear. Nothing can grow dusty or stale.

There are several cashiers' cages located near the exit doors. There the store "ticket" of the individual buyer is finally totaled and the bill paid. The receipted ticket when presented to the doorman acts in the end as the purchaser's pass out of the store. Thus the receiving of payment is greatly economized both in the labor of employees and in the time consumed in making change.

The job of the clerk is exclusively that of handing out whatever articles are called for by the buyer, and at the same time marking the amount of each item purchased upon the ticket of the buyer. Identical items occur on the shelves at intervals of fifteen feet or thereabouts; more staple articles occur oftener. The clerk has merely to reach a few feet to one side or the other to procure a standard package of any commodity. As soon as he has recorded the correct amount on the customer's ticket, his part of the transaction is done. He is ready to serve the next buyer. In addition, the grocery counter is divided into four sections—cheese; fresh bakery goods; fresh fruits, vegetables, and flour; and other staple groceries. One purchases such items at the correct section. Thus the labor of the clerks is further specialized. Nor must the clerk be a salesman. A man with special abilities is not needed. The clerk's duty is to serve out the items ordered rather than to sell.

These commissaries also gain by the use of unusual labor-saving devices. For example, there is an automatic conveyor which transports all grocery items from the warehouse on the third floor to the grocery department on the first. All papers, boxes, cartons, and so forth,

are accumulated at one point and baled or otherwise disposed of. Again, a suction fan removes the orange wrappers. In the meat shop, two saws—one a buzz and the other a band saw, each run by a motor—cut almost all of the meat at high speed. The same department is equipped with a monorail track overhead, which enables all meat to be thus handled until finally placed in sanitary pans in the meat counter.

The Ford stores also save in labor costs by reducing administration to the minimum. In these new stores, doing the business of a great number of independent chain stores, only a comparatively small amount of supervision is necessary. This is the direct result of concentration.

But going further, the stores have no special sales. Therefore, there is no necessity of carrying or hiring extra workers to prepare for such sales or to accommodate the rush. Nor are there employees to handle deliveries or charge accounts.

Labor costs furnish an interesting basis for accurate comparisons and contrasts. In comparison with other stores and store systems, it seems unnecessary to make any qualifications for the Ford stores. However, because of the inclusiveness of the items in their accounts, a combination of the direct and indirect expenses for wages and salaries must necessarily be used. For the Highland Park store alone during the last six months of 1926, this composite of expenses for supervision, purchasing, disbursement, watchmen, and other administration, as well as the direct wages of clerks, suppliers, cashiers, sweepers, doormen, and so forth, amounted to only 6.24% of the gross sales. This, of course, varied for the different departments. For groceries and drugs, the cost of all wages and salaries amounted to only 5.28% of the total sales. For meat this rose to 6.62%. In the shoe and dry goods departments such expense absorbed only 6.26% of each sale. In contrast to this, Professor Copeland states that the average expense for wages of the sales force and for the salaries of those in charge of buying, management, and offices amounted from 9.1% to 9.7% of the net sales in 443 retail groceries in 1922. In this comparison, the wages of the delivery force have been omitted. With that item included, the average for wages and salaries ranges from 10.8% to 12.3% of the sales. Salaries and wages, exclusive of delivery expenses, consumed 15.6% of the gross revenue of 187 retail drug stores in 1919. In 1922, 421 retail shoe stores reporting to the Bureau of Business Research of Harvard University showed an average of from 14.4% to 15.7% of the sales paid out for direct and indirect labor costs.[2] Not even do the chain stores have the possibility of such economies as do the Ford stores.

A fifth economy realized by these new stores lies in the elimination of direct advertising costs. These new mercantile ventures have grown without use of paid publicity. No attempt is made to draw the public into the stores through newspaper advertising, window displays, handbills, special sales, or "loss leaders." The only thing which could possibly be considered as advertising is the use of a few display counters. Yet even this is seldom pure advertising. In the grocery, meat, and drug departments the counters are, rather, storage bins and writing counters upon which to transact business. Only in the dry goods and shoe departments are they really display counters. For practical

[2] Copeland, *Principles of Merchandising* (Chicago, A. W. Shaw Company, 1925), pp. 36, 40, 108.

purposes this is relatively unimportant.

The Ford stores do enjoy some publicity, however. The manager of these commissaries holds that their advertising has come entirely from the enthusiastic recommendations of satisfied buyers. The appeal is solely that of first quality products at attractively low prices. Customers know that they usually can save on their purchases. And they wholeheartedly indorse the store to their friends. Advertising, therefore, is had entirely through enthusiastic customers, yet it costs nothing.

These new stores accomplish a sixth saving by reducing their risks to a minimum and thereby eliminating many of the losses that ordinarily occur in retailing. The stores deal only in staple articles. Neither those articles termed "fancy" because of special packing or the like, nor those of cheap quality as well as price are handled. By great odds, the major demand has been found to be for commodities of high quality yet of ordinary preparation. The Ford stores deal only in those articles enjoying almost universal demand—where the greatest values are likely to lie for the consumers. This same thing applies to the fresh fruits and vegetables handled—those items rarely called for, those that are "fancy" or those that are too cheap, are not handled. Their shoes and dry goods, although very attractive and of many styles and varieties, can scarcely be said to cater to changing fashions. Retailing of the "cheap," the "fancy," the "fashionable," and the "nick-nack" articles is left to others.

Again, the risks of the stores are reduced because of the new principle upon which they operate. Ordinarily, the grocer, the butcher, or the druggist is dependent upon the neighborhood he serves. But the Ford commissaries draw the buyers to them rather than taking the stores to the buyers. People drive many miles to purchase their supplies for the next two or three days or week. As a result, these stores are no longer dependent upon a small neighborhood or community. One section of the city may wither and die—it makes small difference under this new system, since the Ford stores would scarcely notice any decrease in trade.

Nor are there many adjustments to be made on returned goods. All articles are purchased by the customers on inspection. They are staple. And the lack of aggressive salesmanship reduces the possibility of unwanted goods being forced on the customer. Therefore, there is only the smallest possible chance that any commodity will be returned. The costs and losses through adjustments are largely eliminated.

Yet a seventh economy is realized by these huge stores in the capital invested. Or, it might better be said, the capital requirements are reduced to a minimum. Many of the points having a bearing here have been mentioned previously. It has been noted that the investment in land and buildings is less than that usually necessary for any retail establishment with the exception of the mail order house. It has been shown that there is no investment worth mention in display equipment. And as there are no charge accounts, there is no capital investment in equipment for that purpose.

But beyond these economies, the Ford stores also realize a positive gain by the fact that a comparatively small reserve stock is required. And the reserve carried is much more pliable. Unlike independent stores, and unlike the chain stores as well, the reserve stock need not be carried by each small individual store. Instead, one comparatively small reserve can be shifted about within these large stores to keep all

spots on the shelves well supplied. The reserve is concentrated rather than spread at various points over the city. One spot on the shelves may run low, yet the clerk needs only to walk a few more steps to find another shelf of the same article. Such is not the case in other retail systems. Even the individual chain stores must each guard against getting out of any one commodity.

Partly growing out of this economy of investment, yet largely resulting from its policy of small margins and quick sales, results still an eighth means of economy. That gain flows from the exceedingly high rate of turnover of the stock. During the last six months of 1926, the Highland Park store operated with a stock turn at the rapid rate of 19.2 times per year. This means that the sales of the store in approximately 19 days, Sundays and holidays included, equaled the average stock carried. It may be considered, therefore, that that store completely turned all of its merchandise in this short period of time—19 days. Of course the turnover differed widely for the different departments. During this period in the Highland Park store, meat ranked first in rate of turnover, with an average of 176 times a year. The entire stock of meat

OPERATING EXPENSES OF FORD COMMISSARY
Highland Park Store Only, July 1 to December 31, 1926
Sales = 100%

	Groceries and Drugs	Meat	Shoes and Dry Goods	Grand Total
Salaries and wages (including managers, supervisors, store clerks, cashiers, doormen, and proportion of accounting, purchasing, and disbursement departments)	5.56%	6.61%	6.06%	5.98%
Laundry*	.08	.19	none	.10
Refrigeration	.02	.05	none	.03
Store supplies	.22	.55	.05	.29
Store tickets	.16	.17	.14	.16
Total direct selling (including office, buying, management salaries and wages)	6.05	7.58	6.26	6.56
Administrative expenses—extra—portion of entire plant	.10	.07	.19	.10
Depreciation of office equipment	.001	.001	.003	.002—
Factory general—employment, watchmen, superintendents	.04	.03	.07	.04
Telephone and telegrams	.05—	.02	.07	.04
Extra purchasing and disbursement	.12—	.12—	.09	.12
Total buying, office, management (excluding all wages and salaries)	.30	.24	.41	.30
Transportation†	.15	none	.22	.12
Rent (including depreciation on equipment, heat, light, ventilation, insurance on equipment and merchandise, taxes on equipment and merchandise)	.28	.24	.78	.35
Maintenance of equipment	.04	.03	.09	.05
Total fixed charges and upkeep (last two items)	.32	.27	.87	.40
TOTAL EXPENSE	6.83	8.08	7.78	7.38

*Item since eliminated.
†The Highland Park store does not realize its fullest possible economy in this item.

may be said to have been sold out completely on the average of every two days. Next in rank were groceries and drugs, with the high rate of 28 times a year. The sale of groceries and drugs in 13 days equaled the stock carried in those lines. Shoes and dry goods showed the lowest rate, with an average annual stock turn of 5.4 times—once every 67 days.

Finally, the summary of operating expenses (page 319) indicates the gains made by this new sytem of retailing. Here, as in all previous analyses of expenses, statistics pertaining to the Highland Park store only for the six months of July 1 to December 31, 1926, are used. This period of time seems to serve the purposes of comparison best. That was the only full accounting period during which the Ford stores were open to the general public. And figures for the Highland Park store only are valuable, for neither of the other two stores was in operation until some time after the beginning of the fiscal period mentioned. The operating expenses in the accompanying table are given as percentages of the volume of sales.

This table indicates the results of the tremendous economies realized by the new stores. Of course certain qualifications enter. Various items probably would be somewhat increased were the stores operated independently. Yet there are others, such as "administrative expenses" and "factory general," that conceivably could be decreased or eliminated in that case. The major items are quite accurate. It must be remembered that the stores are doing an exceedingly large business for their size at an almost unbelievable rate of stock turn.

[3] Copeland, *op. cit.*, pp. 36, 40, 52, 54, 56, and 108.

[4] *Ibid.*

For whatever value may lie in such comparisons, the following is drawn from Professor Copeland's *Principles of Merchandising*. In 1922, 443 retail groceries operated at average expenses of 17.4% to 19.9% of their net sales. Drugs were sold at an average expense of 27.6% of the sales by 187 stores in 1919. And the expenses of retailing shoes consumed on the average of 27% to 31.2% of the selling price in 421 shoe stores in 1922.[3] Nor should the comparisons be ended here. In many respects, the Ford stores are eliminating the wholesalers. And even though they may not eliminate the wholesalers' functions, they have shown that the expenses for such functions may be greatly reduced. In fact, the Ford commissaries actually operate upon a smaller margin than does the average wholesaler. In 1922, the operating costs of 442 wholesale grocery firms absorbed an average of 11% to 11.5% of their gross sales. And 100 drug firms doing a wholesale business expended an average of 16.1% to 16.5% to pay their costs of operation in 1922. In the southern wholesale dry goods business such expenses consumed 16.6% of the sales on the average.[4] It is easily understood, therefore, that the Ford stores, where they combine the functions of the wholesaler and the retailer by purchasing directly from the producer, are able actually to sell to the consumers at prices below those that an ordinary merchant must pay to the wholesaler!

IV

Finally, the question arises as to how profitable has been the operation of the Ford stores. On first inspection, one would be led to conclude that the investment is approximately sales divided by stock turn plus some liquid capital. And as the net profit has been approxi-

mately 3⅓% of sales,[5] the total net profit, offhand, would appear to be 3⅓% multiplied by stock turn (19.2 times), or about 64% on the investment.

Yet these conclusions are grossly inaccurate. Two other considerations enter in and have a strong bearing—the terms of purchase, and the high rate of turn of the stock. As for the former, everything is purchased on 2% for cash on the twentieth of the month following billing date. Thus, all commodities are paid for in 20 to 51 days—or an average of 35 days—after shipment. But in the Highland Park store, the stock has been completely turned and, for accounting purposes, sold out every 19 days on the average. Finally, this period of 19 days to turn the stock, which includes the time required for shipment, fails to consume all of 35 days, the average time of payment. The Highland Park commissary actually has been selling and receiving cash on goods, payment for which has not yet fallen due. Consequently, the company has ceased to have an investment in merchandise. Actually it constantly is enjoying a balance of creditors' cash on hand which it holds and uses about 16 days until its bills fall due. There no longer being any investment, it is impossible to calculate a rate of profitableness.

[5] See page 313.

V

As large-scale industry has been displacing small manufacturers, so large merchandisers have been replacing the small retailers. And the experience of the Ford commissaries in handling convenience goods probably will add impetus to the movement. Of course, not all neighborhood stores will ever be displaced; yet these new enterprises can profitably replace great numbers of the least efficient of them, greatly to the gain of the social whole. Rewards undoubtedly will be greatest for those who follow the trail, now blazed, before competition grows too keen in the new field.

Yet it would be folly for anyone not well backed by a great deal of capital to invade the field. Many of the economies listed above do not become operative until the business is firmly established and built up to a goodly volume. Again, in many cases, an infant store founded on these practices might suffer severe losses in a strange community while the public was being educated. Finally, such stores must always confine their operations to cities of good-sized populations. Yet they are a new departure in the field of retailing that gives promise of supplementing those portions of the old system that will be retained.

THE COPPER CARTEL

By CARLTON P. FULLER

COPPER Exporters, Incorporated, is the chief important world-wide cartel in which the United States stands out as obviously predominant.[1] This exception to the general policy of nonparticipation is replete with interesting aspects that have had little attention. The very existence of the agreement becomes anomalous from a strict interpretation of the recent horizontal cartel movement as a depression phenomenon; neither the United States nor the copper industry itself has been passing through the valley of low profits. The industry in general, as indicated below, has accomplished the astounding feat of recovering prewar profit margins from a prewar market price and postwar material and labor costs.

But first, what is Copper Exporters, Incorporated? It is a combination of copper *producers* representing 90% of the world's output,[2] formed for the sole (announced) purpose of cooperation *in export marketing*. The obvious reason for the limitation in scope is the dominance of American interests which are subject to antitrust laws except as the Webb-Pomerene Act allows in foreign trade.

Reasons for Formation

One primary reason for the organization can be traced to a deep-seated belief of the American copper producers that the European market has been constantly "rigged" against them. Since they habitually received less for copper sold abroad than for their American marketings, they set out to correct the situation. Great Britain stood out as the chief offender, as in the case of rubber, although on this occasion it was her buying rather than her selling policy that irritated. Not only in Great Britain, but also on the Continent, there has existed for decades an elaborate dealer system for marketing nonferrous metals. These dealers are shrewd buyers and, by stimulating competitive offerings, possibly earned the opprobrium of the producers. "Middleman" in this case, as in many others, has come to connote contumely all too often. The fact that these dealers financed many of the ultimate consumers and carried part of the load of copper between mine and pot did not offset, in the minds of the producers, the conviction that they manipulated the market to the detriment

[1] It is understood that we participate in the electric lamp and steel rail cartels, and share understandings in aluminum, rayon, explosives, manganese, and probably some others.

[2] Participating companies:

Members: American Metal Company, American Smelting and Refining Company, Anaconda Copper Mining Company, Calumet and Arizona Mining Company, Calumet and Hecla Consolidated Copper Company, Copper Range Company, Inspiration Consolidated Copper Company, International Minerals and Metals Company, Kennecott Copper Corporation, Mother Lode Coalition Mines Company, Nevada Consolidated Copper Company, New Cornelia Copper Company, Nichols Copper Company, Old Dominion Company, Phelps Dodge Corporation, Quincy Mining Company, Utah Copper Company, and United Verde Copper Company.

Foreign Associates: Aaron Hirsh und Sohn, British Metals Corporation (since withdrawn), Cerro de Pasco Copper Corporation, Chile Copper Company, Granby Consolidated Mining, Smelting and Power Company, Greene-Cananea Copper Company, Mansfeldscher Metallhandel A. G., Manfeld Aktiengesellschaft für Bergbau und Hüttenbetrieb, Metallgesellschaft, Rio Tinto Company, Société Générale Metallurgique de Hoboken, Société Générale de Mineraux, South American Products Company, and Union Minière du Haut Katanga.

of copper miners. Fluctuations on the London Metal Exchange confirmed this impression. The most important American buyers of copper receive cable quotations from London each day before commencing their operations, and a decline abroad naturally diminishes their confidence in the market here. And, as in the case of all speculative commodity markets, there have been frequent opportunities to cry manipulation.

In America, on the other hand, the copper producers had neither dealers nor exchange to contend with, except in a narrowly limited way. Selling direct to the consumer for cash, they could exert continuous control over the stream of copper from mine to fabrication. Copper Exporters, Incorporated, was designed to remodel the export market according to domestic specifications.

Organization

Machinery to carry out the intention could be relatively simple, inasmuch as United States laws precluded any control over production. Yet the reconciling of world-wide interests in a marketing scheme is always a prolonged process. In January, 1926, rumors were current that the Anaconda interests, aided by Katanga, had already gone a long way toward forming a new copper export association; by midsummer it was reported that the enterprise was ready to launch, but delay in securing the approval of the Federal Trade Commission postponed actual operations until October 15.

Although full details of the combination have, as usual, never been published, it is known that the combination maintains an office in Brussels as well as in New York. The Brussels office is supposed to be operated by an international committee, representing American, British, German, and Belgian interests, which regularly sets a price for copper c.i.f., Hamburg, that has come to be known as the "official" price. While it is believed that no sales quotas applying to individual countries have been established, each member is supposed to keep within a certain percentage of the total export sales and to furnish complete data on all transactions. It is said that buyers must give a written guaranty that the copper will be used in their own works and will under no conditions be resold.

The unexpected decline in copper prices after the formation of the cartel was dubbed by its opponents "window dressing to lull the suspicions of the Federal Trade Commission," but there was no doubt of one accomplishment: the European price was held on a relatively higher plane than the American, reversing the time-honored state of affairs. So thoroughgoing was this reversal that a storm of criticism arose from abroad, and one of the participants in the cartel—the British Metals Corporation — withdrew. This event was hailed by European consumers as the beginning of the inevitable breakup, while Copper Exporters minimized it as a slight defection of an unimportant dealer. The truth seems to be that it was a danger signal, but by no means a fatal blow.

During the whole of 1926, the producers were apparently attempting to disable their principal *bête noire,* the London Metal Exchange, by absorbing standard copper on contracts and steadily cutting down the available warehouse stocks from 126,000,000 pounds on January 1, 1926, to 46,000,000 pounds on August 1, 1927. Copper transactions on the London Exchange nevertheless increased from 101,000

tons in the first quarter of 1926 to 116,000 tons during the first quarter of 1927. Yet early 1927 seemed to bring brighter promise to the producers. The decline of prices was transformed into a sharp advance, and "outside" copper became more and more difficult to obtain. Although the advance was not long maintained, the impression spread abroad that the copper market was at last under powerful guidance.

Such, in brief, has been the development of the most recent association of copper producers. It is well to bear in mind that there have been two others within the past two decades, not including the efficient Copper and Brass Research Association, to which fabricators also subscribe.[3] Before the war, the Copper Producers Association functioned for several years in this country only as a trade association for the collection and dissemination of statistics. Just after the war, a Copper Export Association was incorporated under the Webb-Pomerene Act by most of the leading American producers to function in the export market somewhat along the lines of the present project, but conditions at that time differed fundamentally from those of today: the huge surplus stocks from the war period had to be liquidated in a prostrate Europe, while now stocks are pared down to the minimum and Europe is well on her way to recovery. The chief problem then was financing the load of refined copper; now the question is how best to get higher prices from the consumer without violating the law.

Development of Copper Mining

An understanding of the present development requires some appreciation of what has been going on in the copper mining industry during the past 75 years. There has been a transition from the monopoly of Lake Michigan producers through competition between domestic fields to wider international competition, first from the side of South America and now from Central Africa. Throughout the transition, it should be noted, the theme of constantly reduced costs dominates the progressive expansion of the area of competition.

Ancient as is the use of copper, its era of great expansion dates back only 25 years to the stepping up of production from the porphyry deposits in the southwestern states. Then began a new battle of sections which was later to extend to continents. Modern history in copper began about 75 years ago in the Lake district, where unique deposits of native copper still support the famous Calumet and Hecla Company and its satellites. A quarter of a century later the ascendancy passed to Montana, which held it about the same length of time before relinquishing it to the Southwest (Utah and Arizona). These quarter-century steps, while, of course, approximate,[4] make convenient memory pegs on which to hang the development of copper mining: the contemporary peg may be labeled South America, and the next one in the future will be Africa.

The maturing of each of these sources of supply was heralded as a menace to existing regions—and it was. Only by strenuous efforts to control costs could the old-timers compete with the newcomers. Michigan and Montana could compete with each other on fairly even terms, since both live on vein mines, but a new element was intro-

[3] The formation of a Copper Institute has recently been announced.

[4] The most useful and dependable history of copper mining in the United States was contributed by F. E. Richter to the *Quarterly Journal of Economics*, for February, 1927, p. 236.

duced when the formerly worthless surface porphyry deposits became available. The rise of the Southwest, of South America, and of Africa have been based primarily on this type of ore, and copper mining has become practically copper manufacturing, with all emphasis placed on mass production and low unit cost. Some vein mines are still in the running, and some porphyries must be worked by underground methods, but copper is today dominated by the low-cost, steam-shovel porphyries. Capital is expended lavishly to obtain high output at low cost, until one shortsighted commentator bewails the progress that threw money into the Southwest, and just when the copper market was recovering from the resulting flood of metal, repeated the process in South America, and is now engaged in similar folly in Africa!

Yet the industry is prosperous. With general prices up 50% and its own market down 10%, it is making the same margin of profit as before the war.[5] The metallurgist has done for copper what the chemist has done for other lines. He has made it possible to work at a profit ores containing 1% of copper that a generation ago would have been considered so much dirt—as, indeed, 99% of it still is! Among numerous methods, the most basic in recent years has been selective flotation, which has made it possible to utilize ores not only low in grade but of such complexity that it had long been considered impossible to separate the metals mixed therein at any profit.

These developments in copper concentration make difficult sledding for the higher-cost vein mines except for those which have been foresighted enough to acquire low-cost subsidiaries; their total cessation of operations would not cause more than a temporary shortage in supplies. And the condition seems permanent; not only is Africa now developing three huge producers (Katanga, Bwana M'Kubwa, and N'Changa, in order of importance), but Andes Copper Company has started its career as the third great producer in Chile, and important new ore discoveries are being made in the Southwest.

Some high-cost producers have thought to remedy their plight by the American cure-all, a tariff, pointing to the heavy imports as justification but neglecting to mention the heavy net exports. Neither the refiners, who profit by treating the copper imports, nor the United States producers, who control all the large South American mines, are ardent supporters of a tariff, which, consequently, has made little headway.

There was, however, a ray of hope in the Webb-Pomerene Act, which led to the formation of Copper Exporters as outlined above. It has frequently been pointed out that not only is the vertical combination now somewhat out of favor, but the horizontal cartel is no longer designed for offense, as before the war. It is now essentially a defensive alliance, born of the wartime overcapacity which has inflicted cut-throat competition on many industries. While superficially the copper industry might seem to be one of the sufferers, a closer examination of the facts tends to show that it is only the normal minority of marginal companies that is suffering seriously. The rest, of course, would be pleased to receive higher prices for their copper, but there are enough of them making a prewar margin of profit (which, to be sure, should be substantially larger to compensate for the decline in value of the dollar) to supply the needs of the world. Hence the dif-

[5] See Arthur Notman, *Engineering and Mining Journal*, January 22, 1927, p. 122.

ficulty in securing widespread cooperative action. Twenty representative companies have cut their per pound cost after depreciation from 12 cents in 1923 to 10 cents in 1926.[6]

Because of the disparity of interests between the marginal producers and the majority, as well as on account of federal laws, there has never been an effective all-inclusive organization of the modern American copper industry, which fact lends interest to the following statement from the London Economist:

> The national combination must obviously in the order of nature precede the international, for international arrangements can only be entered into by national industries which have already attained a high degree of union; but the national combination might conceivably be brought about primarily by the urgent necessity of entering into the larger combination, and if we see a development of combination, in our own country this is likely to be the main motive.[7]

Problems of the Copper Cartel

The quotation gives an inkling of one of the difficulties besetting the copper cartel. It is obvious, of course, that any cartel contains the seeds of its own disruption, because the members who enter it are never equal, and the sacrifices called for may come to appear unendurable. We may note the threatened withdrawal of Germany from the steel cartel within a year of its formation. But there are less general problems which affect the copper producers' combination peculiarly.

1. *Effective price control involves control of production.* "A restriction of competition, which must mean a restriction of production, is the first and most obvious result of combination."[8] Yet this is the one thing of which Copper Exporters must beware, so far as the United States is concerned, for evidence of concerted curtailment would be the signal for the Federal Trade Commission to invoke the Sherman Anti-Trust Act. When certain individual mines early in 1927 decided to cut their output in order to end the price decline, they were very careful not to publish the fact, and a leading trade magazine went to great lengths to point out that the logic of circumstances inevitably forced this curtailment in each individual instance without any consultation whatever. It is not to be expected that the foreign producers will do all the curtailing. Here lies a real dilemma for Copper Exporters, Incorporated: to curtail may bring dissolution by law; not to curtail means the abandonment of the only effective price control.

2. Were united curtailment legally possible, an economic question would immediately become uppermost: *the lower the output, the higher the unit cost.* This situation is common to mass production methods in most industries, but is particularly applicable to copper mining because relatively little additional labor is required by increased output. The so-called "criminal competition" and "incomprehensible waste of stockholders' reserves" turn out to be nothing more than efficient production methods in the modern manner with a careful eye on unit costs.

3. Furthermore, *price control of any kind has its legal dangers,* since the Webb-Pomerene Act reads "with the further prohibition of any agreement, understanding, conspiracy, or act which shall enhance or depress prices or substantially lessen competition within the United States." To which the *Journal*

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[6] Computed from annual reports.

[7] *London Economist,* January 15, 1927, p. 95.

[8] *Loc. cit.*

of Commerce (New York) added this editorial comment:

> Every sincere man knows that export monopolies, dealing in commodities for which there is a world market, cannot fail to have some influence upon world prices, hence upon prices in the home market. . . . . But to maintain the legal fiction that it is possible to protect domestic business from feeling the effects of such combination is to encourage the sheerest hypocrisy.[9]

4. Provided there were no legal difficulties, there would still remain an effective economic check on substantial price increases in the *substitution of other metals,* particularly aluminum. Even at present prices this is no idle threat, especially in Europe, where aluminum high-tension lines are quite in favor because superior tensile hardness enables much wider spacing of the expensive high-tension towers. It is sometimes said as a rough measure that aluminum is an effective competitor of copper whenever its price is less than twice as high.

5. *Fundamental divergence of interests* between:

(*a*) *High and low cost producers.* Undoubtedly some of the deep-vein mines are fighting extinction. There is a limit to their reduction of costs, since they cannot expand volume as freely as the newer low-cost porphyries. It is to the interest of the latter to strive for high volume with low cost, whereas the marginal producers aim for a higher market price, which cannot be attained so long as high volume tactics are pursued by a large part of the industry.

(*b*) *Custom smelters and miners.* The process of cooperation in the marketing of copper inevitably involves periods when it will seem wise to withhold offerings. To the owners of the copper—the miners — the additional holding may be well justified by results, whereas the custom smelters, who make their basic profits from treatment of ore and blister, are anxious to have a continuous flow of metal through their plants, selling approximately as much each day as they take in. Deviation from such a consistent policy involves in a way speculation in copper which they do not care to undertake. It was the dissatisfaction of these interests that helped break up the Copper Export Association a few years ago.

(*c*) *Rivalry for leadership in the industry.* For many years there has been going on in the copper mining industry a program of consolidation which has left two dominating interests, the Guggenheim-Kennecott group and Anaconda. The former have special interests in smelting and refining, the latter in fabrication. Both control low-cost South American producers, but Anaconda bears a heavy bonded debt from which the other group is free. Thus, while it is unnecessary to assume that either deadly strife or clandestine partnership prevails, it is possible that a serious difference of interest may arise at any time.

6. *Antagonism abroad.* Americans should experience no difficulty in sympathizing with the hostile attitude of foreign copper consumers in view of our own strenuous protests against rubber control. Indeed, their plight may be worse, since, as we have seen, export copper prices have been held higher than domestic, while rubber prices were as high in England as in the United States and caused equal dissatisfaction there. With freedom of action on copper once bought eliminated and with possible sources of credit from the dealer dried up, the foreign consumer may be excused if he takes time to become adjusted to the new régime.

[9] *Journal of Commerce,* July 21, 1926.

7. But it is the *foreign dealer* who protests most vigorously against the cartel which was specifically designed to cut out his activities. In fact, Copper Exporters, Incorporated, offers an example of cartel formation not for protection against each other's competition so much as for warfare against another economic group, the dealers. Since combination frequently stimulates opposing combination, retaliation may eventuate, but in any case it is worth while to examine briefly the economic soundness of combating so strenuously the European dealer's position in the copper market.

Copper Exporters, Incorporated, seems to believe that the dealers abroad maneuver the price of copper against the producers, particularly by their tactics on the London Metal Exchange. The charge has a familiar ring; does it differ essentially from the constant charge of the wheat farmer that the Chicago Board of Trade and the numerous grain middlemen manipulate prices against the grower? The cotton planter and the New York Cotton Exchange are equally at swords' points. So far as can be observed, copper occupies no unique position. The question becomes the general one of whether middlemen or speculative markets can be justified. The answer visible on all sides is that efficient units in both fields play an essential part in the modern economy. "Elimination of speculation," at which Copper Exporters aim, involves a closed market of a type similar to that for nickel and aluminum, and substitutes the judgment of a few for the economic process of higgling in an open market. Such a scheme cannot long alter the course of an international commodity market by merely changing marketing methods.

8. That fact points to a fallacy in the producers' assumption that it was foreign dealers who kept the export price low. It was the unloading of copper abroad by the producers that depressed prices. Excessive production necessitates unloading somewhere, and the chief change Copper Exporters has so far introduced seems to be the unloading of copper in the United States. This, rather than new marketing tactics, accounts for the relatively higher export price since October, 1926. Naturally, the domestic consumer will rejoice at the competitive advantage given him in world markets, and foreign consumers will mourn, but results to the producer seem to be about the same.

9. Protestations of distress from some sections of the copper industry must be viewed in the light of a general tendency affecting copper somewhat as it does grain growing. The United States is no longer a pioneer country; just as some of its wheat fields must yield in export markets to those of Canada, Argentina, and Australia, so must some of its copper mines yield to those of South America and Central Africa.

Possibly the copper cartel confronts no more serious problems than any other major combination, but it is unique in being largely deprived of a cartel's major weapon—control of production. Unless it can make shift to acquire such control, its dominance in export marketing will bring little added return to the producers. And until American laws become more encouraging to national combination, Copper Exporters, Incorporated, will probably remain the chief outstanding example of American participation in an international cartel.

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THE DEPARTMENTS OF THE HARVARD BUSINESS REVIEW

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SUMMARIES OF BUSINESS RESEARCH

MECHANICAL AIDS TO MERCHANDISE CONTROL IN DEPARTMENT STORES[1]

Introduction

"THE use of machinery in the operation of the retail unit is negligible," writes Paul Mazur in *The Principles of Organization Applied to Modern Retailing*. This statement promises soon to refer to a past rather than to a present situation. Already there are available several machines designed to furnish information to the department store executive more rapidly and more economically than it can be obtained from hand-kept records, and with the increasing utilization of such machines department store methods of merchandise control may be expected to change materially.

Merchandise control, by which is meant all schemes for analyzing merchandise handled beyond departmentalization, has been made necessary by the keen competition of recent years, but mechanical merchandise control is still in a preliminary stage. The four studies presented here, however, give a sample of the best current practice, and with modifications can be adapted to use in many similar stores.

The studies are arranged in order, beginning with the simplest system, which controls the merchandise only at the point of sale, and ending with the most complete, which follows the merchandise from the time it is ordered to the time of resale. The major problems in the use of machines in merchandise control are: (1) at what point control is to be exercised: sale, purchase, order, or inventory; (2) whether the system shall be planned in advance or reports accumulated as needed; and (3) what will be the relative economy of specific machines.

Hazen and Horton, Incorporated[2]

Control at the point of sale is obtained by Hazen and Horton, Incorporated,[3] with the aid of machines. Accumulation of sales by salesperson, by department, and by type of sale, (cash, charge, or c.o.d.) is accomplished by tabulating equipment at an expense no greater than that of manual methods.

The mechanical devices used are three: the "punch," the "sorter," and the "tabulator."[4] The sales slips and

[1] Adapted from a thesis written for the course in Retail Store Management in the Graduate School of Business Administration, Harvard University: *Mechanical Aids to Merchandise Control in Department Stores*, by William O. Forsell and Arthur B. Poole. This thesis was awarded the Clark prize for 1927.

[2] Fictitious name.

[3] See Chart 1.

[4] The punch is operated by keys and has a capacity of about 300 cards an hour. It punches the cards in such a way that they can be sorted according to the information indicated by the punchings. The information can then be tabulated. The sorter, which is electrically operated, has a capacity of about 400 cards a minute. It can be adjusted to sort the cards according to any classification within the limits of the information on the cards. The electrically operated tabulator has a capacity of 75 to 150 cards a minute. It lists and totals the information contained in a stack of sorted cards and prints the result on a roll of paper. It may be compared to five adding and listing machines which depress their own keys and record totals automatically.

credits are brought to the tabulating department at the end of each day and a card is punched to show the following information from each slip:

Department
Salesperson
Salesbook number
Sales check number
Amount of sale
Discount, if any
Date
Type of sale (cash, charge, or c.o.d.)
Ledger or cashier number

Credits are recorded on a different colored card.

The cards are first sorted by type of sale, and then cash sales are resorted by cashiers. A total of all of the latter items serves as a check on the cash turned in by cashiers. Similarly, charge and c.o.d. sales totals are checked with postings to sales ledgers and the total of c.o.d. slips which have been given to drivers.

The cards are then resorted and tabulated; in one tabulation are obtained total sales by salespersons, total sales by departments, and total sales for the store, daily. The over-all cost per card of this information is about one-third of a cent.

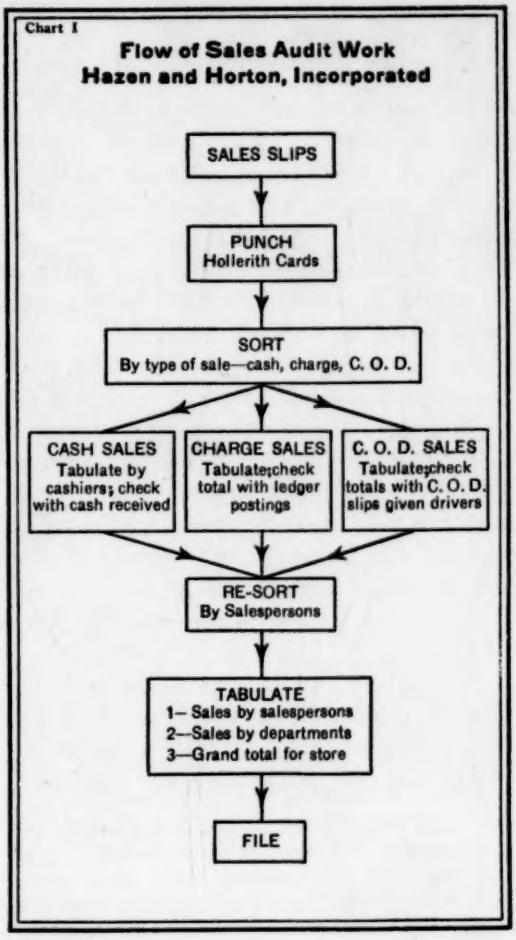
Six months' operation of this sales audit from the summer inactivity through the Christmas peak has shown the cost to be about the same as that of the method used before the installation of the machines. However, the new records are more complete, errors are more quickly traceable, and information is more promptly obtained. This company has not yet used punched-hole machines for stock control, but the research director, believing that valuable information can be obtained at a slight increase in cost, is developing such a method of stock control.

In extending the system in use by Hazen and Horton, Incorporated, the principal problem is whether a finer classification of merchandise sold will be sufficient or whether a complete unit control[5] of purchases, stocks, and sales will be necessary. The research director believes that the value of the latter system would be greater than the extra cost, and he is therefore undertaking its installation. Such a system should not only be consistent and smooth-running within itself but should also correlate with the possible extension of punched-hole accounting to accounts receivable and payable ledgers and to records of merchandise on order. It should also

[5] Unit control is control by pieces or physical units as distinguished from dollar control.

Chart 1

Flow of Sales Audit Work
Hazen and Horton, Incorporated



fit departments of varying types of merchandise and amount of sale.

Sales Audit Machines

The case of Hazen and Horton, Incorporated, exemplifies a method of control at the point of sale. An endeavor is made to obtain the same sort of control in a different manner by the use of a series of machines which have been recently invented.[6] The series consists of the following mechanisms:

1. A sales record machine
2. A machine to audit mechanically the sales tickets
3. A machine to punch on cards the information on the sales slip
4. A machine to sort the above cards into desired classifications
5. A machine to tabulate the sorted cards

The sales record machine occupies a space of 10 by 15 inches and is 7 inches high. It combines the major features of the autographic register, the cash register, and the punched-hole press. A telephonic credit authorization attachment will probably be added to this machine as optional equipment.

As an autographic register the machine turns out sales slips in duplicate or triplicate. The fan-folded rather than rolled type of slips is used for three reasons: (1) Specific audit slips in the machine may be referred to without disturbing the others; (2) slips may be fed into the audit machine without rerolling; (3) a new charge of slips may be put into the machine at any time.

No tally of sales slips is used. The need is obviated, since the machine retains, locked within itself, the audit copies of the sales slips so that they cannot be lost. Furthermore, the mechanical nature of the audit and the safeguards thrown around the salesperson in the use of the machine makes the tally unnecessary.

The date is set up in the machine each evening when the day's slips are removed. The salesperson's number and department number are set up when the machine is turned over to him. Only a person with an audit key to the machine can change them. They are crimped into the slip in the same manner as in a check protector. There remains to be written by the salesperson only the name and address of the purchaser, a description of the merchandise, and the prices, extensions, and footing. The shifting of the carbon is automatic and obviates waste.

As a cash register, the machine has a single drawer. A series of slides, instead of keys as in the ordinary cash register, are used in order to provide greater visual proof of accuracy.

The sales slip cannot be turned out of the machine until one of three buttons marked "cash," "charge," or "c.o.d." has been pressed. This is a direct preventive of carelessness. There are also 37 hole-positions used to classify further, on punched cards, the merchandise involved. This classification will be discussed below.

Turning the crank perforates the amount of the sale on the slip. This perforation prevents an error in recording an amount different from the written total, and checks the honesty of the salesperson. At the same time department and clerk numbers and the date are crimped in the slip, and a hole is punched opposite the words "cash," "charge," or "c.o.d."

The operation of the machine as a punched-hole press is automatic. The mechanism punches holes to indicate the

[6] At the time this article was being written, the machines were just being put on the market. Therefore, there was no installation which could be examined. However, because they promise a number of economies, they merit consideration.

type of sale, amount, clerk, and department in the duplicate sales slip at the same time that the items are crimped on the customer's slip. There is left only classification of merchandise. By means of a series of keys, similar to those which punch the holes on the duplicate slips to indicate the amount, additional holes may be punched to indicate the merchandise classification. The arrangement of 37 hole-positions gives several hundred possible classifications which, since they are not of interest to the customer, are punched only on the duplicate slips and not printed.

After completing the preparation of the sales slip the clerk turns the crank of the machine, the original is sheared and ejected, the duplicate is stored in the machine, and a new slip is brought into position. The customer's slip is of the divided type so that the upper half may be used as an address label and the lower half wrapped with the merchandise.

The sales audit machine is essentially four adding machines, each with three sets of adding wheels. The machine feeds the slips one at a time, lists every slip on the first adding machine by means of the punched holes on the slip, lists the slip on one of the other three machines, depending on whether it is a "cash," "charge," or "c.o.d." item, passes over the voided slips, and sorts all the slips into groups by type of sale.

When each sales strip is finished, the subtotals are transferred to the second set of wheels on each of the four machines, and subtotal, clerk, and department number are printed on the tape. When all strips for a department have been transferred to the second set, the departmental total is transferred to the third set of wheels where the store total is accumulated. By utilizing a portion of the adding wheels, the number of transactions is also accumulated. Proof of accuracy is obtained by checking the sum of the totals by types against the total tape on the first machine. The machine will record slips slightly faster than one a second. It should maintain an average of about 20,000 slips a day.

The card punch is an attachment which may be added to the sales audit machines. It punches a 3x5 inch card for each slip going through the sales audit machine, and indicates the type and amount of sale and classification of merchandise. The many hundred possible classification numbers may be so coded as to reveal the department and classification within the department. The punching of this extra card is necessary because the sales slips, being made of thin paper, are not readily sorted mechanically. It is done only when further analysis is desired. One wonders if the record machine could not be made to punch a card rather than a sales slip duplicate. This substitution would eliminate the card punch.

The sorter is quite similar to other card-sorting equipment now available. Each sorting segregates the cards by digits in consecutive rows of classification numbers. Thus, the number of sorts necessary is equal to the number of digits which classify the merchandise. A counting device counts each card as it falls into its respective digit rack.

The tabulating machine is the ordinary stock posting machine to which two devices are attached. The first "reads" the cards by means of electrical contacts made through the punched holes as the cards are automatically fed from a hopper. The second is a frame fitting over the keyboard with a solenoid coil over each key, operated by electric impulses from the first device, thereby automatically tabulating the cards until the hopper is empty.

Two features of these devices are worthy of especial note. The first is that the device may be reversed so that an operator, using the keyboard of the posting machine, may punch blank cards. The other is the removability of the solenoid frame from the keyboard so that the machine may be immediately shifted from posting or footing to tabulating.

Several general features deserve attention. The sales record machine is manually operated, while the others are operated by electricity. The sales audit machine will be leased, while the other devices will be sold. The company expects to sell its machines substantially cheaper than comparable ones are sold for at present. The field for the machine is, of course, limited. For departments, such as candy and notions, where the size of sale does not warrant the making out of sales slips, the use of the machines would be too expensive. Where unit control is desirable, these machines would offer no means of handling the variety of data necessary, although they might still be used for writing and auditing the sales slips.

There is a further limiting factor to the development of a machine such as this one. The average salesperson who has no knowledge of accounting or ability to handle complicated machines can be depended on for accuracy only to a limited extent. The expectation of reasonable accuracy is the limiting factor in the development of the clerk-operated control mechanism.

In addition this machine is useful only for control of merchandise at the point of sale. Many stores desire to control (1) at the time of placing the order, (2) at the time of actual receipt of the merchandise, or (3) while it is still in inventory. The machine has no possibilities in these directions.

There are several miscellaneous disadvantages to the machine as it is now designed. If the authorizing attachment is used, the machine will not be usable for other transactions in case of a delay of authorization. It will be awkward to secure customers' signatures on checks because of the difficulty of moving the machine. In large departments it might be a problem to secure space for machines for a large number of clerks. Finally, if a bonus is used, the lack of a tally slip will make it difficult for the salesperson to gauge the progress of his sales or check the accuracy of the office's figures. This lack might dampen the incentive.

With due allowance for these limitations, however, there is still a field for mechanisms of this type. Few stores have done much with control at points other than that of sale, and for many lines classification within the department is the only means which can justify its cost. For such departments, of which a kitchenware department is a good example, the machines offer certain unusual features of mechanical merchandise control.

The machines will make possible an economy in salespersons' time. Not so much time will be necessary to write the slip; the time of shifting from books to cash registers is saved; and no waiting is necessary while other salespeople use the registers. Since they are small in dimensions and weight, they can be kept at more convenient places than cash registers.

The machines should make possible a reduction in operating costs. The sales record machine will probably sell for approximately $100 and so should be considerably less expensive, even although more of them must be used, than the cash register, autographic register,

and punch press which they supplant. The tabulator and other devices will also probably be less expensive.

There should be an economy in the personnel of the control department, since one person can audit about 20,000 sales transactions a day with one machine. No punch card operators are needed. However, the tabulating machine must be supplied with new cards and reset after every operation, a procedure which takes considerable time. Other tabulators, which are more fully automatic, cannot be used with these cards.

Accuracy and protection are provided for by the use of slides instead of keys and by perforation of the amount. The minimum amount of writing which is required from the salesperson also reduces the chances of error. A separate machine for each clerk eliminates the error of one clerk's registering the wrong number or getting into the wrong cash drawer. Only an authorized person can get at the duplicate slips, and since they are in one strip, they cannot be lost. The mechanical audit eliminates the danger of mathematical mistakes.

These machines will probably be most successful when used in departments in which there are relatively few salespeople, individual sales are large enough to require sales slips, and mechanical unit control is not desired.

J. C. Humphreys Company[7]

The merchandise control of this high-grade department store is maintained at both the points of purchase and of sale and is accomplished through the use of tabulating machines. Sales and purchases are subdivided by classifications within departments. The policy of the store has been to give the buyers any auxiliary information that they desire, the cost being apparently a minor consideration.

Sales and purchases are analyzed by departments on adding machines to accumulate daily sales and monthly profit and loss statements. The tabulating machines are used to break down figures within each department. Punches, sorters, and tabulators are used.

In 25 departments, in which cash registers are used, this control is not maintained. In the remaining 45, the merchandise is classified into from 5 to 200 classes.

Purchase control is obtained from the invoices. After the bookkeeping department has finished with them, a card is punched for each item with a separate classification number which has been previously entered on the invoice by the buyer. The following information is punched:

Invoice number
Department number
Manufacturer's number
Classification
Total cost (plus loading)
Total selling price

The totals by classifications are obtained by running the cards through the tabulator, and the total checked for error against the total obtained by the bookkeeping department.

Similarly, a card is punched for each item on the mark-down sheet showing:

Date
Department
Manufacturer's number
Amount of mark-down

Sales analysis is obtained by punching a card for each sales transaction showing:

Day of month
Kind of sale
Classification
Department number

[7] Fictitious name.

Amount of sale
Price range
Count

These cards are totaled by classifications, and the department total checked for error against the total of the sales audit department.

Returned purchases and returned sales are subtracted from the purchases and sales totals, respectively, by means of complement cards.[8]

With the beginning inventory, purchases, mark-downs, and sales figures available by classifications within departments, the calculation of final inventory by classification is simple. This information is furnished to the buyers monthly and is also used by the merchandise department to detect inflated or inadequate inventories, stock shortages, and slow-moving lines.

The above function is the primary one of the tabulating department of this company. Much additional information is accumulated, however. Among other reports are:

Reports on sales, purchases, mark-downs, and stock on hand by price ranges;
Reports on sales and mark-downs by sizes;
Reports on purchases and mark-downs by manufacturers.

These reports are obtained by resorting the cards punched previously. Cards are punched especially to obtain:

1. Glove department sales by classification, price, clerk and amount. This is a cash register department and, therefore, control is obtained by considering merchandise as sold when it is moved from reserve to forward stock.
2. Stock analysis by season, classification, and price in certain departments where physical inventories are taken weekly.
3. Analysis of comparison office reports, showing by departments:
   Number of price adjustments taken
   Number of price adjustments
   Number of times merchandise was stocked
   Number of times merchandise was not stocked
   Number of times merchandise was o.k.
   Number of times late in stocking
   Number of times a report was requested
   Number of times service was found to be good
   Number of times service was found to be poor
4. Analysis of errors showing:
   Number of errors discovered by each packer
   Number of errors made by each clerk
   Number of each type of error by departments
5. Value of supplies on hand by classifications. This valuation is accomplished by the same method that is used to compute stocks on hand in the selling departments.
6. Number of influence sales by clerk and department. This report is accumulated because salespeople are paid a bonus for sales made elsewhere than in their own departments when they are influential in consummating the sale.

In analyzing the system of this company, its policy in furnishing the buyers with any information which they have desired must be kept in mind. The system has gone through an evolutionary, not a preplanned, process. As additional reports have been desired, they have been added to the work of the department, existing cards having been used where possible. As a consequence of this haphazard growth, the procedure is not compact, much duplication of ef-

[8] The theory of the complement card is that the same result is obtained by adding the complement of one number to the other as by subtracting the first from the second. For example, to deduct $250 from $4,000 a card is punched for $9,999,750; the complement addition in the tabulating machine gives:

$ 4,000
9,999,750
0,003,750

This amount is the same result as is obtained by subtracting $250 from $4,000.

fort is evident, and the cost is high. The over-all cost, exclusive of occupancy costs, is more than eight-tenths of a cent per card, in comparison with about one-third of a cent for Hazen and Horton, Incorporated.

The duplication of work, mentioned above, is due to the extra accumulation of purchases, mark-downs, and sales by manual methods. Although the two totals are used to check against each other, the expense involved in the manual analysis could probably be saved, since the mechanical method has been found to be as accurate as the manual.

The lack of preplanning of reports is likely to result in the accumulation of minor reports, while more important ones are neglected because the buyers have not thought to ask for them.

A final criticism is that the control of stocks by dollars is not always satisfactory, since classifications are liable to be too broad to distinguish profitable and unprofitable lines.

The system has several advantages, however. The monthly determination of stocks by classifications affords a valuable means of control, not only to the buyer, but also to the executives over the buyer.

The use of the tabulating department as a service department makes it flexible in use. Reports when not needed can be discontinued. This flexibility enables the information to be given to the buyer while it is still timely.

Much information is wanted only once or twice with perhaps occasional check-ups. The system and policies of this department are admirably suited to this sort of work.

The controller of J. C. Humphreys Company believes the subclassification of departments to be well worth the total cost of the tabulating department which comes to about $36,000 a year. The special sales reports are considered to be a valuable aid to intelligent buying because they are accurate, prompt, and to the point. Although the work of this department is valued highly, it does not, however, justify any greater expense than is absolutely necessary.

Some attention has been given to the cost of producing special sales reports with the conclusion that a report taken from cards especially punched for the purpose costs no less than one prepared by hand, since so great a part of the total cost lies in providing the cards and punching them.

The conclusion of this company is supported by others, and it may be laid down as a general rule that the use of the tabulating machines results in economies over manual methods only when more than one distribution is to be made from the cards punched.

Jameson Furniture Company[9]

The basic feature of the system of the Jameson Furniture Company[10] is a perpetual inventory of stock on hand wherein every piece of furniture in the store or in the warehouse is represented by a card in the stock file. The machines used by the tabulating department are of the usual three types—punches, a sorter, and a tabulator.

All new merchandise received from the manufacturer is recorded on a receiving sheet. The articles received from one concern at one time are listed, showing from whom they come, how delivered, and when and by whom received. Receiving sheets are then checked against invoices. Accuracy is insured by the use of a "blind check" procedure. Each different type of fur-

[9] Fictitious name.

[10] See Chart 2.

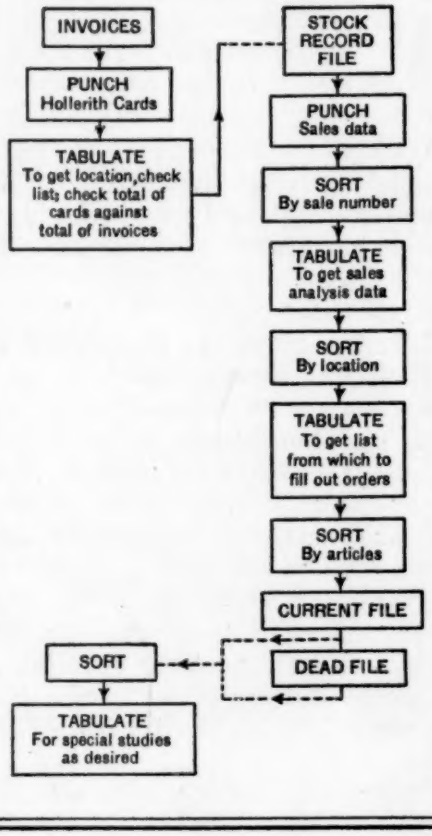
niture is given a separate number by which it can be identified, but exactly similar pieces have identical numbers. This number is marked on each crate.

The "placing man" then takes the new stock and puts it into its warehouse location. As he places each article he makes a memorandum of the floor and section (each floor is divided into several numbered sections) where the article has been placed and the quantity, article number, number of the manufacturer, and description of the article as to finish, number, and size.

This "placing memorandum" contains all the information needed to punch the cards, except cost and selling price. Cost is obtained from the invoice, selling price either from the buyers' notation on the invoice or from the tab card in the stock record which isolates articles of that description. The cards are then punched, one for each article. The first four columns of the card show location of the merchandise, the next four the number which represents that type of article. Then come in order the numbers representing the manufacturer, the name of the article in abbreviated form, the finish, size, and finally, the selling price.

Chart II

Order of Tabulating Procedure
Jameson Furniture Company



The accuracy of the cards punched is checked by running them through the tabulator after sorting them according to location. From the list which the tabulator prints, the items are relocated by a checker to make sure that the location and identification on the card is correct. The cards are then resorted by article number and placed in the stock file.

Practices have been evolved to take care of detail difficulties arising from instances that are not typical. Among these practices is the use of different-colored cards to show crated goods, returned goods, and goods on the selling floor used as samples.

Merchandise is delivered from the warehouse, not the selling floor. The sales tickets, after being sorted by hand according to delivery dates, are brought to the stock record clerks. These clerks remove from the file the cards which represent the goods sold and fasten ticket and card together. From the information on the sales ticket the punch operator completes the sales information on the cards; the type of sale, salesman, and number of the sales ticket.

At this point the cards are run through the tabulator. All the cards of one sales ticket number appear on the recording sheet together, with the article

names and descriptions on one side of the sheet and the sales number, quantity, cost and selling price, and the total selling price on the other. The two halves are divided; the first is clipped to the sales ticket and the second put into a box for use by a clerk who makes a sales analysis.

The cards are then resorted by location and again listed on the tabulator. This list gives by location the article name, finish, article number, manufacturer's number, location, and sales number. When all the articles on one floor have been listed, the machine stops and the sheet is torn off. At the top of each sheet is written the delivery date.

From this list the merchandise is located and sent to the finishing room to be touched up before delivery. Tags are attached to the pieces showing the sales number and delivery date.

On the day before delivery all cards are again sorted by sales number and listed on the tabulator. From this list each article can be identified as it comes from the finishing room and can be placed for delivery purposes with the other articles going to the same customer. The original sales ticket is sent with the merchandise, is signed by the customer, and is returned. The cards, which have been in an "out on delivery" file with the duplicate sales ticket, are then put away in a dead file.

When mark-downs are taken it is necessary to have some device which will automatically subtract the price reduction from the original selling price. This subtraction is accomplished by means of a complement card.

The stock clerk is notified of mark-downs and special sales. In the latter case one card is punched for each type of article on which a reduction is taken. If the mark-down is permanent, a complement card is punched for each article of that particular type in stock and is placed with the original card. Subsequently, when cards are run through the tabulator, the original price is registered by the original card and the mark-down by the complement card. After the complement cards have been used, they may be tabulated to determine mark-downs by types of merchandise and by manufacturers.

An analysis of sales is made to show:

Total of all merchandise sold each day
Total cost
Total original selling price
Total actual selling price
Total credits

This information could be obtained from the original cards. For purposes of recording credit, deposit, and partial-payment plan information, however, it has been found more convenient to keep a book record by totals for each sales number. Because the number of items per sale is fairly large, it is cheaper to punch new cards from this record of totals than to use the old cards.

No attempt is made to set a minimum quantity on each article because about 30 items a day are dropped from stock. Any minimum then would be of too transitory a character to make it worth while.

Buyers are notified when the last warehouse card is drawn out of the stock file. The merchandise in the store then constitutes a reserve stock if the line is to be continued.[11] The buyer is again notified when the stock is entirely exhausted.

The cards in the stock file are run through the tabulator when that machine is not otherwise occupied, and the

[11] It may be open to question whether or not this warning is early enough in every case. If desired, however, a signal could be arranged so that the buyer would be notified before the stocks became this low.

list of stock on hand thus obtained is given the buyers for their information. The entire stock is gone over in this manner at least once a month.

The same lists are used to check the inventories monthly by relocating in the warehouse. Shortages are recorded on a file kept hanging on the wall in the shipping office. One man spends most of his time looking for merchandise that has been misplaced. In addition, a complete physical inventory is taken annually and checked against the cards in the stock file.

The test of any installation such as this one is the results accomplished. The cost of operation as described is more than 2 cents a card. The Jameson Company has practically no shortages, however, and has achieved the phenomenal stock-turn of 14 times a year, about 7 times as great as that of the average furniture store.

Of course, these results are not due solely to the stock record system. That has been, however, a real factor in providing adequate and timely information upon which to purchase and upon which to base executive control.

The disadvantages of this system, especially from a department store viewpoint, are as follows:

1. A running total of stock on hand cannot be kept to facilitate ready reference. The buyer is furnished only once or twice a month with the inventory as of a certain date. If he desires information at any other time, the cards must be especially counted.
2. The stock record must be located at the warehouse. Because of the inconvenience, the buyer may neglect the records when they might be of real value.
3. The volume of business handled by the Jameson Company is large. The furniture department of a department store would be unlikely to have so large a sales volume; yet it would require the same number of machines. The result would be higher operating expenses. This disadvantage would, of course, be obviated if the machines could be kept busy by similar work for other departments.

The advantages are as follows:

1. The cost of keeping a perpetual inventory is about the same in this manner as by manual methods.
2. Once the cards are punched, additional information can be rapidly and cheaply obtained. The additional information that might be obtained includes: the amount of purchases by lines and manufacturers; the number of sales by sizes, finish, and color; the number and amount of sales by type (cash, credit, or c.o.d.); the amount of sales by salespersons; the mark-downs by lines and manufacturers; and the amount of slow-moving merchandise. The cost of accumulating this information by hand would be prohibitive.
3. Since the cards representing merchandise to be shipped are selected by the stock record clerks, the oldest merchandise can be moved out first.
4. The lists printed on the tabulator save much time and expense in listing merchandise to be shipped and in accumulating it for delivery.
5. Space is saved in the warehouse since the location is punched on the card. Therefore the merchandise does not need to be grouped by types but can be placed wherever there is room for it.
6. The danger of having dead stock, because there is no sample on the selling floor, is obviated. The samples have a colored card. If inspection of the file shows no colored card, the matter is investigated.
7. The exact value of the stock on hand can be obtained with very little difficulty and expense.

The Jameson Furniture Company feels, from its success, that the buyers have sufficient information. The chief drawbacks of the plan apparently cannot be obviated; nevertheless, in this case the advantages outweigh the disadvantages, and the plan is very successful. If enough work can be provided for the equipment, there is no reason why the same system could not be suc-

cessfully applied to the furniture department in a department store.

Theoretically, a system of the same basic nature as this one could be installed in every department in the store. Practically, however, such completeness would be prohibitive in cost and in many cases entirely unnecessary.

Where the value per unit is high and where timely detailed information as to size, color, style, or material is of value in buying or selling, the expense of such a system is probably justified. In such departments as furniture, coats, and high-priced ready-to-wear clothing, the information acquired through the maintenance of a punched-hole stock record may be well worth the cost of operation. In notions or kitchenware departments, it undoubtedly is not.

In departments such as hosiery a dozen pairs might be considered a unit for stock control purposes. Under such a plan the record might be kept only for reserve stocks, it being assumed that the forward stock would remain fairly constant, or that a card might be pulled from the stock file at the time the first pair was sold from the package. In the latter case only the broken-package stock would be uncontrolled.

In general, stock record keeping by the punched-hole method is practicable in departments where the value per unit is high and where timely detailed information is of value in buying and selling.

Conclusion

There are fundamental differences in the procedures described as to the point or points of control. The sales record machine and Hazen and Horton, Incorporated, exercise mechanical control over merchandise only at the point of sale. J. C. Humphreys Company combines mechanical analysis of both sales and purchases as a means of control. The Jameson Furniture Company ties together mechanical sales and purchases analysis with a mechanical stock control between the time of purchase and sale.

A final step in mechanical control would be to alter the type of control in operation at the Jameson Furniture Company by bringing the initial point of application back to the date of order. A punched-hole card file could just as easily control merchandise while on order as while in stock; the same cards could be used for both purposes. One company now provides a typewriter and punch electrically connected in such a way that tabulating cards may be punched automatically to agree with the information written on an order blank in the typewriter.

Merchandise control is easiest at the point of sale because there the merchandise is already separated physically into departments and because sales records are necessarily accumulated, either by the cashier or salesperson. The limiting factor in actual control at this point is the expectation of reasonable accuracy from salespeople who do not understand accounting and cannot operate complicated machines.

The tabulating machines are designed for a different purpose than that of simply controlling at the point of sale. They are intended to meet every reasonable demand for analysis and control. Therefore, simplicity of recording data and low cost are sacrificed in order that the records may provide the maximum in flexibility and complete analysis.

While a differentiation between machines of these two types will doubtless continue, it will probably grow less. Machines emphasizing economy, speed of recording, and completion of the record at the time of the transaction

will endeavor to increase the possible data to be recorded within the salesperson's limits. Machines emphasizing completeness and flexibility of their records will endeavor to speed up and cheapen their procedure.

The possibility of combining the use of more than one type of machine in a department store is urged. It appears theoretically simpler and easier to use the same procedure throughout the store. However, departments vary widely in the type of merchandise sold, the value of the items handled, and the service rendered. It is quite possible to use several different types of machines in a large store and at the same time to increase the mechanical accounting efficiency.

A few of the attempts to apply to department stores the mechanical devices which may make merchandise control more effective have been outlined here. The subject is full of undiscovered potentialities, and the growing realization of the need for timely but detailed information in department store operation makes it seem probable that future developments will be relatively rapid.

A few more years should see some form of mechanical control in operation in the majority of department stores. Stores failing to avail themselves of merchandise accounting machines will suffer heavily, either from relatively poor assortments of merchandise or from burdensome accounting costs.

CASE STUDIES IN BUSINESS

CENTRALIZED PURCHASING

PURCHASING, as one of the important functions undertaken by an industrial organization, is being constantly studied in an effort to reduce costs and to increase general efficiency. The two cases presented are concerned with the centralization of the procurement function as a means of accomplishing this end. A study of the first case, that of a small plant in which a high degree of craftsmanship is required, affords an opportunity to evaluate the factors involved in functional versus line control of purchasing. The second case, that of a larger concern with several units distributed in various parts of the United States and Canada, permits an examination of the factors involved in concentrating purchasing in a central office versus continuing these functions at the various plants.

The Contract Furniture Company

In 1915 the assistant to the general manager of the Contract Furniture Company undertook to install control of purchasing. Within two months he incurred difficulties inherent in the craftsmanship type of production and the old-time personnel. The question of continuing this method, therefore, was brought up for executive discussion.

The Contract Furniture Company was founded in 1800 for the manufacture of high-grade furniture according to the specifications of customers. Sales were made to interior decorators or directly to clubs, private homes, fraternal organizations, and hotels in all parts of the United States. Yearly production in number of pieces was constant. Sales approximated $300,000, of which about $125,000 was ordinarily represented by two or three contracts.

The furniture produced by the company had earned a reputation for consistently good quality as a result of the skill of the employees. All were craftsmen, and many of them had been with the company 25 years.

The foremen were regular workmen who, because of exceptional ability or long service, had been made the heads of their departments. The general manager, who had been employed by the company for 40 years, however, did not place full responsibility upon them. He walked through the plant many times each day, greeted workmen by their first names, made decisions on details, and assisted foremen in the solution of problems which they brought to his attention.

Of the total cost of production 30% was for material; labor represented almost all the remainder. The final cost of this labor, however, was difficult to estimate. Prices quoted by the company, consequently, varied from 50% less than actual cost to 50% more than actual cost.

On January 1 each year, foremen estimated from observation the quantity of materials on hand and reported this with a statement of the current market value to a clerk who computed the inventory.

When an order was received, drawings of the piece of furniture to be con-

structed were made in the designing department. Upon the basis of blueprints of these drawings, the head of the designing department, the mill superintendent, and the general manager quoted prices. Under the system of independent purchasing, the foreman of each department then placed orders for the materials required for his part of the production. A few materials, such as office supplies, nails, designers' materials, art material for the decorators, varnishes, shellacs, oils, glues, burlaps and cotton cloth for upholstery, and a few types of hardware, were purchased for stock. Paints, varnishes, and oils were purchased, regardless of price, from one or two companies which furnished a definite quality. Tapestry of the required quality, which was imported material, was obtainable only from a few companies specializing in decorative fabrics. The lumber was purchased air-dried and was then kiln-dried in the company's own kilns. Most lumber was of standard quality.

Orders which amounted to more than $2,000 each were approved by the general manager. The foremen checked materials received and were held responsible for their conformance to specifications and quality.

The assistant to the general manager realized that only an expert could judge by observation the water content of lumber. He was unable to determine whether or not vendors supplied him with the stated grades; therefore, he did not purchase lumber independently. He believed, however, that he could make independent purchases of stock material and thereby secure lower prices than had been obtained by foremen who had become accustomed to purchasing from one or two companies. Foremen described to him such materials needed, and by purchasing them he could save time for these men whose attention should be given to production. If all purchasing orders were sent to him to be mailed or delivered in person to vendors, he would be able to secure lower prices, and to control or observe the quantity and prices paid.

During the first month or two of his attempt to systematize purchasing, however, he found that the time spent in describing materials was much greater than that required by foremen for writing and mailing orders. A man who was not a master craftsman could not visualize the details of an artistic product and at the same time visualize its place in every individual scheme of interior decoration. To be successful, therefore, an independent purchasing agent for this plant had to have the combined knowledge of all the foremen.

When, under centralized buying, purchases were made by the agent at the dictation of the foremen, the latter was responsible for quality. On all purchases, however, when the purchasing agent made the decision from whom to buy, he alone was responsible.

A typical example met in the two months of systematization concerned a certain shellac which, purchased at a lower price than that previously paid, was applied to a table which was to sell for $500. The total amount used was worth about $1. A short time after it was sold, the finish became clouded, and the table had to be refinished at an approximate cost of $50. The quality previously purchased would have cost approximately $1.50.

Although no instance had occurred when the foremen openly objected to usurpation by the purchasing agent of what they considered their responsibility and although they had not objected to the criticisms of their orders, there had been an atmosphere of hostility.

Comment

The manager of the Contract Furniture Company in centralizing the purchasing function expected that lower prices would be secured, that foremen would be permitted to give greater attention to production, that any concessions to foremen would be eliminated, that more efficient control over quantities of materials purchased would be effected, that possible confusion in regard to payments to vendors would be prevented, and that the quality price ratio on purchases would be improved.

He anticipated that a central purchasing agent might secure a reduction in prices in several ways. A foreman is necessarily restricted in his ability to give sufficient attention to purchasing to develop a knowledge of all economical sources of supply. He is primarily interested in production and has no time to devote to the study of general conditions which might affect the market. He has neither the time nor the organization to purchase on the basis of competitive bids. He usually purchases for the immediate needs of his department and is not likely to consider similar needs of other departments with the view of consolidating orders to secure quantity discounts.

The purchasing agent in specializing on procurement would acquire knowledge as to the best and most economical sources of supply and would purchase from these sources. He would be able to watch business trends and regulate his purchases according to the condition of the market. He could put out proposals, where quantities to be purchased warranted, and place his orders on a basis of the competitive bids received. Likewise, by consolidating requisitions and purchasing in large lots, he could obtain quantity discounts.

An important advantage expected to result from centralized procurement was the increase of the foreman's effectiveness by permitting him to concentrate on production without having his attention distracted and his time taken by the necessity of having to handle procurement also. The saving in attention and in time which might be effected would depend upon the actual efficiency developed by the purchasing agent. Where he procured satisfactory materials, the effectiveness of the foreman would be improved, but where the materials were not so good as the foreman procured, the foreman's time and attention would be diverted to the overcoming of difficulties arising from the use of poorer materials.

A considerable amount of time saved as a result of centralized purchasing was, as a matter of fact, being used by the foreman in describing the materials to be purchased. This may have been attributable to the difficulties involved in measuring the quality of some of the materials, the measurement of which had not progressed beyond the use of the "experienced eye" of the foremen. A means of measuring quality of other materials apparently did not exist, and the foremen had evidently been depending on the reliability of the vendor established through prior satisfactory relationships. The cost of preparing specifications would have been excessive under such circumstances, considering the small quantities of materials needed and the rather large variety of goods produced.

Apparently some resistance had developed among the foremen to the removal of the purchasing function from their control. This was no doubt attributable in part to the natural desire of the men to retain what they already had acquired and which in their own

minds increased their importance in the organization. The "pain of a new idea" usually has to be contended with when a change is made. Wherever the service rendered by the purchasing agent proved to be inefficient, a real cause for ill will was present.

Possibly the foremen had been receiving commissions on purchases and the loss of these commissions made them oppose the new plan. The removal of the purchasing function from the foremen would have made it much more difficult for them to obtain commissions. The discharge of foremen receiving commissions might be proposed as a means of correcting this questionable practice, but the fact that commissions had been received by any particular foreman would have been difficult to determine. Commissions are frequently not sought by employees, but are actively and cleverly proffered by salesmen. It is a responsibility of management to prevent the placing of too great temptations before the employees, and the centralization of purchasing would remove this possible enticement.

The general manager no doubt expected to improve the control over quantity of materials purchased in several ways by centralizing purchasing under a purchasing agent. With centralized purchasing, deliveries could be checked, promptness demanded, and delays eliminated. This method would prevent short deliveries supported by possible collusion on the part of foremen. The tendency of foremen to overbuy would also be prevented.

He further expected that payments would be more carefully supervised by a central purchasing agent than by the several foremen. The purchasing agent could see that prompt payments were made so that full advantage of cash discounts would be taken.

The prospect of improving the quality price ratio on purchases was expected to result from centralizing the purchasing function. This would be secured through greater trading ability of the purchasing agent and his more expert knowledge of prices and conditions surrounding the purchases.

However, a careful audit of these factors after a trial of centralized purchasing finally led the management to return to the former method where the foremen were made responsible for purchasing. In this audit the following questions were considered:

1. Were best sources of supply being used by foremen?
2. Were market fluctuations present in material prices and were these important?
3. To what extent were price concessions lost which might have been gained by purchasing in large quantities?
4. Was it practicable to attempt to prepare adequate specifications to permit centralized purchasing and purchasing by means of competitive bids?
5. To what extent was foremen's time taken in attending to purchasing?
6. To what extent had production been delayed because of poor delivery service?
7. Were unnecessary and obsolete materials on hand as a result of purchasing by foremen?
8. Were foremen receiving commissions?
9. Were trade discounts being taken and were any being lost?
10. Had foremen shown trading ability and buying knowledge commensurate with that of a competent purchasing agent?

The actual findings of the company were that possible savings on materials did not offset assured quality and contented atmosphere in the plant. The fact that the company was a craftsmanship organization where skill of employees and quality of product were of prime importance bore great weight in reaching these findings. In a concern where production was more standardized and where the factor of skilled labor was less important, the audit

would no doubt have indicated that the procurement function could have been profitably centralized.

The Nona Furniture Company

The Nona Furniture Company manufactured reed, fiber, and rattan baby and doll carriages, lawn and porch furniture, house furniture, wooden chairs, opera seats, school desks, car seats, and cocoa mats. Of the company's seven factories, three were located in the New England states, two in the Middle West, one on the Pacific Coast, and one in Canada. Its eleven distributing warehouses for finished goods were located in the principal cities of the West, Middle West, eastern part of the United States, and the eastern part of Canada. Of the factories located in the New England states, Factory No. 1 produced approximately $3,750,000, Factory No. 2, $3,000,000, and Factory No. 3, $750,000 worth of goods. Of those in the Middle West, Factory No. 4 produced $2,250,000, and Factory No. 5, $3,000,000 worth of goods. The other factories, Nos. 6 and 7, each had an annual production of approximately $750,000 worth of goods. Sales of the organization were between $14,000,000 and $15,000,000.

All factories did not produce the same articles. Some of the factories, however, manufactured products similar to those of other factories. Three factories made the same kind of baby carriages and reed furniture, two made the same kind of baby carriages and fiber furniture, four made the same kind of wooden chairs. Three of the factories each had the exclusive production of a different article. Warehouses were in reality factories, and performed the finishing work on approximately 50% of the product. Chairs, for instance, were shipped from the factory to warehouses for assembly and finishing.

The material required in the manufacture of the different articles varied. Rattan was bought in Singapore and China, and fiber was bought in India. Five or six months elapsed between the purchase of these materials and their actual use in manufacturing goods.

It required about three months to make wooden furniture and opera chairs. Baby carriages were manufactured in about two months. Some materials were bought in the semifabricated state and then were sent to finishing mills. The company used large quantities of imitation corduroy; it bought the grey goods from the manufacturers and sent the cloth to bleachers and dyers to be finished. An executive stated that the company thus was able to save on the final cost of the goods and to obtain exactly what it wanted.

Prior to 1919, each factory and warehouse purchased for its own needs. No purchases were made on a speculative basis; supplies were ordered only as needed to keep a three to six months' requirement in stock. One year's requirement of lumber, however, was stocked. Each factory and each warehouse had a purchasing agent.

Until 1919 the company did not have central executive offices, although the general policies of the company were directed from its oldest plant, located in New England. This method of operation had proved successful, and in 1919 the company decided to establish central executive offices in one of the large New England cities. After the establishment of the central executive offices, an effort was made to introduce standardized methods in purchasing materials and in effecting sales. The company established a laboratory, and standards were set for raw materials. Supplies

were bought only after they had been tested and found to be suitable for the needs of the company. After the establishment of the executive offices, it was found that some of the plants had been buying finishing materials at prices that were as much as 100% above the price paid by other plants.

The company established a cost accounting system for comparison of costs in the different factories. It was found that a difference of cost was traceable principally to one of two causes: either labor was cheaper in one factory or warehouse than in another, or the materials were purchased at lower prices. In order to overcome the inequalities in prices of materials, it was decided that the different factories and warehouses should pool requirements for raw materials commonly used by all, and that these should be purchased by the general manager. No factory or warehouse could buy more than $200 worth of machinery or equipment to be carried on the property account without written authority from the executive offices. This restriction did not apply to operating supplies. It did include however, common finishing materials such as paint and varnish which were bought on specifications.

After making a thorough analysis of the products offered by different manufacturers, the general manager placed the order for all common manufacturing requirements with the vendor who offered the product best suited to the company's needs. A copy of this order was sent to each factory or warehouse, which was given authority under the contract to requisition a definite quantity. The quantities of common materials requisitioned annually from 1919 through 1923 by each factory amounted to approximately $100,000 for four of the factories, and $75,000 for the remaining three. Similar requisitions made by each warehouse were $25,000 annually.

In 1924 the company had 22 persons purchasing for the specific needs of the different factories and warehouses, as well as the general manager who purchased for the common needs. Three of the men were experts who purchased board lumber. An agent in Singapore purchased all the rattan and reed required. Each factory and each warehouse had its purchasing agent.

The company had secured economies by purchasing common factory materials through the general manager.

In 1924, therefore, the Nona Furniture Company considered engaging a purchasing agent to head a department which should make and control purchases centrally. The company believed that, if it established a central purchasing department to make the principal purchases for all factories and warehouses, it could secure better prices on all raw materials required. The principal advantage to be derived, however, was that of better control of inventories, a control which would minimize the total amount of money invested in raw materials.

It would be difficult to obtain a man capable of obtaining the necessary cooperation of the factories and of managing a central department which would assume all purchasing authority. Each factory and each warehouse, furthermore, had a man trained to buy materials needed specifically by it. The company would have to bring such men to headquarters, or sacrifice the value of their experience. A system of centralized control of stocks would have to be devised and operated in order to maintain effectively a central purchasing department.

An executive of the company stated

that he did not consider a keen shopper a desirable man for a purchasing agent since any shrewd buyer could buy goods in large quantities at favorable prices. The company desired an engineer who could set up buying specifications to insure the grade of materials needed for each factory. It desired also a man who knew thoroughly all sources of supply, and one who could prevail upon the factories to use selected materials.

Comment

Group buying by a central agency finds its chief advantage in the economies resulting from massing common purchases and in the capitalization of a higher skill in purchasing than might be available to any single plant in the group. Centralized purchasing permits specialization on the buying of materials in a way not possible in diversified purchasing. Buyers become expert in the purchase of classes of materials, follow market conditions, and develop reliable and economic sources of supply. By purchasing in large lots rather than in several small lots, quantity discounts may be obtained. Where the requirements of several plants are handled centrally, vendors find it only necessary to deal with one rather than two or more purchasing agents. This arrangement permits the vendor to quote lower prices without reducing his profits. Even though material is purchased for a single plant, better prices may be secured by the central purchasing agent than by the local plant in certain cases because of the increased buying prestige of the larger centralized organization. Where similar materials are purchased for several different plants by a central agency, all records relating to those purchases are brought together in one place, an arrangement which eliminates duplication and makes for economy of time and money. Ordinarily, greater uniformity in quality of materials purchased will be secured in consolidating purchases than where purchases are diversified. This in turn improves the uniformity of quality of similar products produced by different plants. Smaller inventories may be carried under a system of centralized purchasing, where large lots are being bought from assured sources, since vendors are prepared to meet demands because of the larger stocks they carry to meet the larger orders, and since the market from which the supply can be drawn is broader than that which can be tapped by local purchasing agents. In addition, the resulting standardization of material requirements between the various plants reduces the diversity of materials and simplifies the inventories.

On the other hand, certain disadvantages have to be recognized in centralizing the purchasing of materials. The most important disadvantage is probably the lack of sensitiveness of the system. Where sufficient time exists to permit purchases to be made centrally rather than locally, purchasing by the central agency may be followed, but in an emergency or where requirements in amounts or character of materials are changing rapidly, local procurement must of necessity be resorted to. Where unimportant and dissimilar materials are needed by various plants in small amounts, it is likely that the administrative expense involved in attempting to purchase these centrally would be excessive. The attempt to centralize such purchasing would result in a concentration of detail without effecting simplification.

Centralizing the purchasing function increases the difficulty of taking discounts, owing to the time required to

compare invoices with records of quality and quantity of goods received; therefore, diversified materials required by different plants might better be handled locally. The central purchasing organization imposes an overhead, and its extension is warranted only when savings would be affected at least equal to the overhead added. The risk involved in defining materials by means of specifications is present to a greater degree in centralized purchasing than in local purchasing. Where close relationship must exist between the source of supply and the processing so as to relate the character of the material to immediate technical requirements arising in the production processes, a sufficient degree of control is not possible with centralized purchasing, and local purchasing becomes imperative.

It may be necessary to give consideration to quality under an existing trademark which may be dependent upon material supplied from sources developed by a local plant. In such cases the continuation of the purchase of the material by the local plant would no doubt be desirable in order to maintain the former standard of quality. Transportation costs may also make central purchasing inadvisable in certain cases. The fact that some plants have been paying as much as 100% above the prices paid by other plants does not necessarily mean that centralized purchasing is the only means of correcting this, for organized pooling of price information between the purchasing departments of the various plants would tend to accomplish the same thing. However, where it is otherwise desirable to adopt centralized purchasing, better and more uniform prices would probably be secured by this method than by local purchasing.

The expectation that centralized purchasing would effect better control of inventories and in turn would minimize the total amount of money invested in raw materials is not entirely warranted. While centralized purchasing may be expected to effect a reduction in total inventories, the control of inventories is not a function of purchasing. It is a problem of storage, and may be effected through centralized establishment of order points and order quantities.

The company was in error in expecting to include the development of specifications as a part of the function of the central purchasing organization. The preparation of specifications is a function of design or engineering and not of purchasing. Likewise, the expectation that the purchasing agent should prevail upon the factories to use selected materials is not sound, since this also is an engineering function. It is probable that with centralized purchasing the tendency would be to attempt to standardize materials between plants wherever possible, an effort in which the purchasing agent and the engineer would cooperate.

The executive of the company who did not consider a keen shopper a desirable man as a purchasing agent was disregarding the frequent presence of bargaining zones in purchasing.

The company favored buyers familiar with the individual needs of each factory and warehouse rather than buyers who specialized in terms of materials. Specialization in materials, however, permits the buyer to study the condition of the market and the source of supply and to place his orders to the best advantage to secure maximum price saving, market concessions, and deliveries.

The company actually decided to establish a central purchasing depart-

ment, and selected a man from its own organization to head it. Initially, the department was to consist of the purchasing agent, two assistants, and three or four clerks. Small articles of hardware and lumber were to be purchased by each factory as had been done in the past, and at first only materials which were common to two or more factories were to be bought by the central purchasing agent. The department was to purchase in terms of materials and was not to undertake any engineering or storage functions as had been originally suggested. No effort was to be made to make speculative purchases; the policy adopted was to purchase for immediate needs only. No effort was to be made to operate a central warehouse for raw materials, although some of the raw materials such as rattan and reed were to be sent to one of the factories located in New England where this material would be selected and treated. The company expected that the savings made by the new central purchasing department would pay the cost of the department and would result in greater efficiency.

A survey of the case and the advantages and disadvantages which have been enumerated would tend to substantiate the belief that the company acted wisely. It is to be expected that the plan would develop further so that materials common to more than one plant and at least some of the important materials, even though used by only one plant, would be purchased by the central organization. Such plan would leave to the local plants the purchase of emergency materials and those relatively unimportant materials needed in small quantities at each plant.

Summary

Certain general conclusions regarding centralized purchasing may be drawn from the study of these two cases. In a single plant or group of plants the principal advantage lies in the economies which result in combining common purchases and in the application of greater skill in purchasing than is likely to be available where the function is diversified. The principal disadvantage is a lack of sensitiveness which makes it difficult to meet varying quantity and quality requirements for materials.

THE SELECTION OF A BANK

THE wise business man of today selects his bank quite as truly as his bank selects him; and he makes his choice with the same care that he makes his other connections. He realizes that adequate banking connections are a needed supplement to proper management and methods in successful business operation.

Banking connections, once established, normally remain unchanged. Circumstances sometimes arise, however, which may make the selection of a new bank necessary: the bank first selected may be unable to loan the desired amounts; the loan policy may undergo some unwarranted change; relocating a factory's offices may make a change in banking connections expedient; personal relationships may enter; or the factory executive may feel that a new connection will be advantageous in view of

changing methods both in banking and in business.

The case of the Ardley Paper Company is illustrative of the problem of the concern or individual who desires to establish new banking connections. The factors determining the choice of a bank when changing, moreover, are identical with those determining the choice of a bank for the first time. Hence, the principles of the case evidence the possibility of broad application.

Ardley Paper Company Case

In 1920 Joseph Ardley formed the Ardley Paper Company with a capital of $35,000 for the manufacture of paper boxes and paper specialties. As president and owner, he planned to expand the business out of earnings. The factory was in a small town, with the sales office in an adjacent large city. The company produced only upon order and purchased raw materials as needed. By 1925, through a conservative policy of reinvesting of earnings, the capital of $35,000 had been increased to $210,000.

From time to time the company had borrowed, on collateral, small amounts from its bank and had always paid when due. This borrowing was primarily to establish its financial position. In 1926, however, the company needed to borrow $20,000 for working capital; but when Mr. Ardley applied for an unsecured loan, the bank refused any loan unless secured by collateral.

Following this refusal, Mr. Ardley decided to change his account, which averaged from $15,000 to $20,000, to some other bank which would meet his requirements. The following banks were conveniently located near the sales office: the Stewart National Bank, the Sterling National Bank, the Blair Drummond Trust Company, and the Dundee Trust Company. Mr. Ardley made inquiries concerning these banks and secured a balance sheet of each.

All the banks, with the exception of the Stewart National, paid, according to the clearing house agreement, 2% on deposits with an average monthly balance over $500. The Stewart National, however, paid no interest on deposits.

The vice-president of the Stewart National said that they were willing to finance seasonal requirements, but that they did not accept accounts which would be accompanied by requirements for permanent loans. The stock, par value $100, sold at $1,110 to $1,130 per share. The balance sheet of the bank was as shown in Table I.

The vice-president of the Sterling National Bank told Mr. Ardley that they laid more stress upon the character of the management of the borrowing company than upon its balance sheet. He illustrated the bank's liberal loan policy by citing several instances when the bank had loaned up to several times the capital of the borrowing company because of the bank's belief in the ability of the management and the soundness of the requirements. The officers and directors, who were men of wide experience in different fields of business, attempted to anticipate the trend of business, to advise customers according to the forecasts, and to warn customers in advance of any proposed reduction in loans.

The Sterling National Bank carried a relatively small proportion of United States securities and other investments in corporations and foreign governments. Loans and discounts included about $6,800,000 in foreign bills and $10,200,000 in real estate loans. The stock of the bank, par value $100, sold

at $330 a share Its balance sheet is shown in Table II.

After talking to the president of the Blair Drummond Trust Company Mr. Ardley was of the opinion that the outstanding features of this bank were that it considered of great importance the good will of all individual depositors, and that it had a trust department which tended to stabilize the earnings of the bank. The stock, $100 par value, was selling at $265. The balance sheet of this bank was as given in Table III.

The stock of the Dundee Trust Company was selling at $375 a share. It had deposits of $21,000,000, with a capital of $1,275,000 and a surplus of $1,700,000. It seemed, therefore, that the position of the bank was reasonably sound. Mr. Ardley considered that the management of the Dundee Trust Company was progressive. He also found the officers more accessible and alert in attending to his questions than were those of the other three banks. Mr. Ardley judged that his deposit of $15,000 or $20,000 would be of more importance to a bank of the size of the Dundee Trust Company than to one as large as the Sterling National Bank. Two of the directors of the bank were officers of large paper manufacturing companies. The balance sheet of this bank given in Table IV.

Commentary

The refusal of the loan which caused the Ardley Paper Company to change banks illustrates a common misconception in establishing a line of credit. Mere borrowing against collateral does not establish a line; loans without security are essential to establish and maintain a line of credit. The com-

TABLE I. STEWART NATIONAL BANK BALANCE SHEET AS OF SEPTEMBER 28, 1926

RESOURCES		
Loans and Discounts		$ 63,514,001.89
U. S. Bonds and Certificates		29,472,024.76
Bonds and Securities (R. R. equipment)		5,454,637.89
Banking House		3,710,537.39
Due from Banks and Bankers		2,568,261.91
Exchanges for Clearing House		36,704,645.12
Due from Federal Reserve Bank		13,517,889.87
Customers' Liability on Acceptances		403,781.71
Interest Accrued		550,616.20
Cash		687,017.82
		$156,583,414.56
LIABILITIES		
Capital Stock Paid In		$ 4,250,000.00
Surplus Fund		12,750,000.00
Undivided Profits		9,050,272.80
Reserved for Taxes, etc.		580,972.20
Due to Banks and Bankers	$65,117,202.30	
Individual Deposits	43,284,816.55	
Certified Checks	16,404,374.89	
Cashiers' Checks Out	4,199,370.87	
U. S. Deposits	294,865.00	
		129,300,629.61
Acceptances Executed		651,539.95
		$156,583,414.56

pany should have made a definite agreement with the bank, and then kept the granted line of credit open by using it.

Inasmuch as Mr. Ardley decided to make new banking connections, however, he should consider such factors as (1) size, (2) location, (3) financial condition, (4) line of credit agreement offered, (5) type of bank, (6) loan and investment policies, (7) service, and (8) reputation.

Size. Connections should not be established with a bank which has a direct loan limit below the possible needs of the business. Although some states permit straight loans to individuals to 15%-20% of the bank's capitalization, most states agree with the National Bank Act, which limits loans as shown in Table V.

Since the smallest capital investment, that of the Dundee Trust, is over $3,500,000, this table shows that any of the banks under consideration has a loaning power far above the needs of the Ardley Company.

Size beyond the necessary loaning power possesses both advantages and disadvantages. The large bank may have diversified loans, both as to industry and locality, and thus possess stable loaning power, whereas a bank with specialized loans may be hard pressed by business fluctuations. The large bank is frequently able to give additional services.[1] Furthermore, it may be well and favorably known both in its own and other localities; this fact may contribute considerable prestige, inasmuch as the mere name may make a favorable impression when used in business transactions, particularly when establishing new connections.

On the other hand, in smaller banks the small account is of greater relative importance; hence the bank will be more vitally interested in the welfare of the borrower. Frequently, the small banker will have a more complete grasp of all the details of the account, al-

[1] See discussion under "Service."

TABLE II. STERLING NATIONAL BANK BALANCE SHEET AS OF SEPTEMBER 28, 1926

RESOURCES		
Cash and Due from Banks		$ 55,233,240.41
U. S. Securities		12,117,794.03
Investments		18,714,256.21
Loans and Discounts		202,181,502.52
Banking Houses		8,303,246.06
Customers' Liability on Acceptances		13,874,110.62
Accrued Interest Receivable		681,132.33
		$311,105,282.18
LIABILITIES		
Capital	$17,000,000.00	
Surplus and Profits	20,842,561.60	
		$ 37,842,561.60
Reserves for Interest, Taxes, etc.		1,606,103.44
Deposits		234,391,156.63
Acceptances Executed		14,639,687.72
Items in Transit with Foreign Branches		733,344.41
Acceptances and Foreign Bills Sold and Other Liabilities		21,892,428.38
		$311,105,282.18

though most large banks give the same personal attention by placing one officer in charge of a small group of accounts.

Location. Selecting a bank near the place of business will conserve the time of those handling the daily transactions of the business. A greater advantage lies in the lessening of possible loss by theft—a very real factor if much cash is handled. Furthermore, patronizing the local bank tends to contribute to the general welfare of the community served. However, since all of the banks considered by the Ardley Company are near by, none has any competitive advantage in this respect.

Financial Condition. Strength depends not upon size but upon management. The analytical study of the balance sheet may reveal effects otherwise unnoticed. However, a single statement has only a limited significance, as it presents a static picture of the bank's condition. A series of statements would

TABLE III. BLAIR DRUMMOND TRUST COMPANY BALANCE SHEET AS OF SEPTEMBER 28, 1926

COMMERCIAL DEPARTMENT	
RESOURCES	
Time Loans	$27,879,717.38
Banking House and Fixtures	623,148.09
Accrued Items	175,587.63
Customers' Liability on Acceptances	2,147,213.61
Demand Loans	14,944,087.07
Investments	2,236,004.35
Due from Federal Reserve Bank	6,103,769.13
Due from Other Banks	1,268,252.73
Exchanges for Clearing House	2,073,976.41
Cash	488,578.43
	$57,940,334.83
LIABILITIES:	
Capital Stock	$ 1,700,000.00
Surplus and Undivided Profits	2,535,539.27
Reserved for Taxes, etc.	245,421.79
Acceptances Executed	2,289,660.63
Commercial Paper Rediscounted	473,875.00
Deposits	50,695,838.14
	$57,940,334.83
TRUST DEPARTMENT	
RESOURCES:	
Miscellaneous Stocks and Bonds	$21,425,074.02
Loans on Real Estate	367,688.76
Notes of Individuals and Corporations	110,594.00
Real Estate	400,749.36
Deposits in Other Banks	297,837.63
	$22,601,943.77
LIABILITIES:	
As Trustee	$14,642,831.26
As Executor, Administrator, etc.	528,179.23
As Agent and Attorney	7,430,933.28
	$22,601,943.77

TABLE IV. DUNDEE TRUST COMPANY BALANCE SHEET AS OF SEPTEMBER 28, 1926

ASSETS		LIABILITIES	
Cash in Office and Banks	$ 3,924,186.63	Deposits	$20,947,043.03
Loans on Demand	4,344,192.84	Capital	1,275,000.00
Loans on Time	14,333,793.85	Surplus	1,700,000.00
Customers' Liability on Acceptances	195,283.02	Undivided Earnings	756,027.62
Investments (Governments and Municipals)	2,333,513.84	Reserved for Taxes, etc.	258,970.19
Bank Acceptances Sold with Endorsement	21,250.00	Acceptances and Letters of Credit	193,929.34
		Endorsements on Bank Acceptances Sold	21,250.00
	$25,152,220.18		$25,152,220.18

be much more valuable, since it would reveal trends and tendencies.

The ratio of *capital investment* (stock, surplus, and undivided profits) *to total deposits* is important from the depositor's point of view. This is called the "ratio of protection" or the "margin of safety," and shows the possible shrinkage in the assets before the loss falls on the depositors.[2]

Table VI summarizes a study made by the Federal Reserve Bank of New York City during 1924, showing the normal tendency among member banks.

These ratios support the generally accepted rule of thumb that this ratio should not fall below 5:1 or go above 10:1. The lower ratio indicates insufficient business for the capital invested, while the higher ratio shows a tendency toward overextension and an insufficient margin of safety for the protection of depositors in event of failure. The "margins of safety" in the banks under consideration are as shown in Table VII.

The low ratio of the Stewart National Bank may be attributed, in part at least, to the type of accounts handled and to the conservative character of the institution. The Blair Drummond Trust Company shows an overextension on a

[2] The assets may shrink more than the amount of the capital investment before the depositors suffer, since the stockholders have double liability to the extent of their stock. This double liability does not, however, extend over surplus and undivided profits. With other conditions equal, it is thus safer to deposit in a bank the net worth of which is chiefly represented by stock than in one having a very large surplus.

TABLE V. WHAT A NATIONAL BANK MAY LOAN TO ONE CUSTOMER
(Expressed in terms of the percentage of its capital and surplus)

	Illustration 1	Illustration 2	Illustration 3
(A) Accommodation or straight loans	10%	5%	5%
(B)*Notes secured by warehouse receipts, etc.	15	20	15
(C) Notes secured by a like face amount of government obligations	10	10	15
Total	35%	35%	35%
(D) Bills of exchange drawn against actually existing values	No limit imposed by law		
(E) Commercial or business paper of other makers	No limit imposed by law		

*Under modifications of this ruling (Sec. 5200) by the McFadden bill, national banks may loan successive increments of 5% of their capitalization, provided the security rises in the same margin above the loan. Hence a bank may loan 50% of its capitalization to one individual on this type of note, provided a margin, above the note, of 55% of the value of the goods is maintained.

TABLE VI. RATIO OF GROSS DEPOSITS TO THE SUM OF CAPITAL, SURPLUS, AND UNDIVIDED PROFITS

Banks having time deposits less than 25% of total deposits	6.4:1
Banks having time deposits from 25–49.9% of total deposits	6.3:1
Banks having time deposits from 50–74.9% of total deposits	7.0:1
Banks having time deposits from 75–100% of total deposits	8.0:1

low capitalization, which results in insufficient protection to its deposits. The Sterling National and the Dundee Trust correspond closely to typical figures of Table VI. Either would meet the needs of the Ardley Paper Company.

The *ratio of loans to deposits* may help discover any tendency toward overlending, but this test is less satisfactory in that the ratio usually varies with the periods of the business cycle. In a comparison between banks, however, a low ratio indicates a conservative loaning policy. This ratio for the four banks is as given in Table VIII.

The ratio of the Stewart National shows conservatism, but there seems to be little choice between the other banks in this respect.

A conclusion as to the financial strength, based entirely upon such a mathematical treatment, should not be arbitrarily accepted, since a bank's strength depends far more on the quality of its loans than upon their quantity. The quality of a bank's loans cannot be determined by the prospective customer. The only available criteria are the character of the present clientele and the seeming ability of the management of the bank; but these also lack conclusiveness.

Line of Credit Agreement Offered. The agreement on the probable terms of the credit line is usually informal, but such agreements are rarely broken without cause. Before definitely choosing a bank, Mr. Ardley should secure more information on the probable terms, since the conservative banks may hesitate to loan the amount needed and since the customs as to the type of paper accepted may vary. The interest rates are doubtless the same. Since all but the Stewart National pay 2% on deposits, this one factor counts heavily against this bank. Bargaining about the terms on which credit is granted may be possible, but it is improbable that in the long run it would prove profitable.

Type of Bank. Under present laws there is little to choose between state and national banks. Membership in the Federal Reserve System is not of prime importance to the depositor; points for and against membership are chiefly "banker's" and not "depositor's" arguments. However, the member bank has some advantage in times of stress in its ability to secure additional credit through rediscounting. All of the banks considered are members of the local clearing house. Such external connections are less important than internal methods and policies.

Loan and Investment Policies. The banks under consideration illustrate what might arbitrarily be called the "four classes" of commercial banks. The Stewart National is a "bankers'

TABLE VII. RATIO OF DEPOSITS TO CAPITAL INVESTMENT

	Deposits		Capital Investment
Stewart National	4.1	to	1
Sterling National	6.4	to	1
Blair Drummond Trust	12.6	to	1
Dundee Trust	5.6	to	1

TABLE VIII. RATIOS OF LOANS TO DEPOSIT

	Loans	Deposits
Stewart National	.59	to 1
Sterling National	.86	to 1
Blair Drummond Trust	.86	to 1
Dundee Trust	.89	to 1

bank" as evidenced by the preponderance of balance sheet items pertaining to other banks. The Sterling National is more purely a "commercial" type, dealing with the financial affairs of industrial firms. The Blair Drummond represents, in total, a "trust" type, since its commercial interests are little more important than its trust activities. The Dundee Trust might be called a "conservative loaning" type. This classification suggests the interests and the type of specialization of each bank, and the industrial borrower should select a bank whose interests match his own.

The comparative stress placed on loans and investments is the key to bank policy. Is the bank—

Liberal or Conservative	as to	Loans and Investments?

Table IX illustrates the respective policies of the four banks.

The Stewart National is conservative in both loans and investments, as the loans are not twice the investments; these investments are shown by the balance sheet to be chiefly government securities. The Sterling National ratio shows a liberal loaning policy; this fact, coupled with the make-up of the investments, shows a lack of conservatism on the part of the management. The Blair Drummond's overloading in the commercial department is somewhat offset by the investments of the trust department. Conservative practice appears in the Dundee Trust investments as loans are the predominant feature.

The Ardley Paper Company will find connections with either the Stewart National or the Blair Drummond Trust undesirable, since one specializes on banker's accounts and the other is largely a trust type. Neither meets the industrial borrower's needs.

Service. Loaning of money, however, does not complete the bank's functions. A large part of the bank's value lies in its ability to give complete credit information, advice on general business conditions, and expert service along financial lines.

The larger banks usually have more complete credit files. Many render valuable aid in business forecasting. Usually the large bank with its specialized experts can best help in building new financial policies if a new market or a new product is developed or a new credit policy is instituted.

Size, however, may be outweighed by familiarity with the problems of the particular business. In comparing the Sterling National and the Dundee Trust, the large bank promises valuable aid in business and financial policies and in forecasting, but the Dundee Trust more than offsets these advantages by familiarity with the business of the Ardley Paper Company. The fact that two of the bank directors know the paper business promises valuable trade information and possible advantageous business connections.

Reputation. This last factor in the

TABLE IX. RATIOS OF LOANS TO INVESTMENTS

Stewart National	1.8:1
Sterling National	6.6:1
Blair Drummond Trust—Commercial Dept.	19.5:1
Bank Total	1.9:1
Dundee Trust	8.0:1

selection of a bank really arises from all of those preceding. Market price of the bank's stock indicates the stockholder's opinion, but this is of little value to the borrower. General opinion from the "man in the street" may indicate the reputation of the bank officers. But the opinion of the actual clientele of a bank is the best indication of the bank's record of service; successful, progressive patrons argue a successful, progressive bank. Further, if many clients are in the same industry, the bank's ability in this field is well suggested.

Summary. A summary of these factors of selection shows the Stewart National unfitted for the needs of the Ardley Company. It is interested in interbank accounts, is expensive, in that it pays no interest on deposits, has a very conservative loaning policy, and would make few concessions for so small an account as Mr. Ardley's. The Blair Drummond Trust is overextended and somewhat unsafe; its trust department influences its operations; and it can give little extra service to the Ardley Company.

Loans could be readily secured from the Sterling National, and it promises many additional services. However, its ultraliberal loan policy contains a considerable element of risk. In contrast with this bank is the Dundee Trust Company. It is small enough to appreciate the Ardley Paper Company's account; although conservative and somewhat backward in matters of modern policy, it is willing to carry the loans and it is safe; its outstanding advantage is its familiarity with the business through its two directors who are in the paper business.

It appears, then, that the solution of the problem confronting the Ardley Paper Company most likely to yield maximum benefits is the selection of the Dundee Trust Company. Though for other companies the solution might vary, the underlying principles governing the selection of a bank remain unchanged.

PRICE REVISION IN FALLING MARKETS

THE problems arising from the necessity of revising prices downward to meet changing conditions may face a manufacturer or dealer at any period of the business cycle. At the beginning of a depression, of course, when the whole price structure is sagging, there are few concerns which do not have to consider the matter. Even at other times, however, on account of present or potential competition, many companies must make price cuts, or at least must think seriously about such action. The three cases here considered represent conditions existing in various trades, conditions which tend to obscure the questions of price policy but which bring out the complexities of the matter.

The Drayton Piano Company was faced with the protection of dealers who had sold a large volume of merchandise on the installment plan; the Dameron Shoe Company was operating in a trade wherein the style cycle moves rapidly; and the Avalon Company occupied a semimonopoly position arising from patent protection.

THE DRAYTON COMPANY

The Drayton Company, located in Cincinnati, manufactured and distrib-

uted high-grade pianos. The rapid increase in cancellations and the inability to get new orders, which followed the recession in business prosperity in 1920, caused the management to decide that a reduction in prices was necessary.

This company manufactured a complete line of upright and grand pianos. Each of these models could be purchased with a mechanical player attachment or a more expensive reproducing mechanism. Upright pianos comprised 75% of the pianos sold, the remaining 25% were grand pianos. The Drayton Company's pianos were reputed among musicians to be of good quality and workmanship. The company sold its pianos at a mark-up of approximately 40% on cost. It was customary for retailers to determine their selling prices by marking up their cost prices 100%. Retail prices ranged from $500 to $2,400. By far the larger proportion of the company's sales were of pianos in the lower part of this price range. The gross value of sales made during 1919 was in excess of $250,000.

Four salesmen were employed by the company, and occasionally the president visited customers. The sales force solicited orders directly from musical instrument dealers throughout the United States. The company's clientele, in 1919, was composed of 200 customers. It limited its advertising to dealer helps and to insertions in trade papers.

In the latter part of 1920, cancellations of orders increased rapidly, and salesmen failed to secure new orders. The inventory of finished goods or stock in process at that time amounted to 500 pianos. This represented an inventory carried, at cost, of approximately $107,000. The company, moreover, had made commitments for raw material at high prices, and the president did not refuse these orders, in spite of the fact that a large inventory of high-priced raw material would result. He was undecided whether to make a drastic cut in prices at once, in order to dispose of the existing stock, or to lower prices gradually as raw material costs declined. At that time, a musical instrument retailer not among the company's regular customers submitted an offer to buy a number of pianos equivalent to 5% of the existing inventory, if the price were reduced approximately 40%.

The Drayton Company had urged the maintenance of retail prices by means of educational material which it sent to dealers, but its actual power of enforcing the price was limited, particularly since no consumer advertising was carried on. The president stated that the difficulty of enforcing a retail price was augmented by the widespread inability of consumers to judge correctly the value of a piano. It was a practice among a few musical instrument retailers to sell low-grade pianos, by persistent sales efforts, for the same price for which high-grade pianos such as the Drayton were sold.

After a consideration of the factors involved, the Drayton Company decided on an immediate reduction of 10% in prices to retailers, but that further reductions were to be tempered by the condition of the raw material market. The president refused an offer for 5% of the inventory at 40% reduction from the previous wholesale price. The total price cuts made during the depression amounted to 25%.

Comment

At a time when a marked change in business conditions occurs, a manufacturer should think seriously of drastic price reductions. Frequently, in busi-

ness depressions, the firms which unload first come out in better shape than those which hesitate to meet the issue courageously. Even for luxury goods like pianos, where demand is relatively inelastic, the manufacturers who are in the vanguard of a downward price trend possess a competitive price advantage over those who merely follow it. In the case of the Drayton Company, however, the decision to reduce prices cautiously and gradually seems justified in view of attendant circumstances.

A severe slash in prices made at once would have entailed heavy losses because of the protracted period of manufacture in the piano industry. If such reduction were to be made, a loss would have to be taken on finished stock, goods in process, and inventories; in addition, because of raw materials on order, further losses could be expected during the succeeding six or nine months.

The decision in regard to the question of price revisions cannot safely be made by a manufacturer without considering his need for protecting channels of distribution. This duty must be fulfilled during periods of depression even though it might be to the temporary advantage of his company to extend its field of sales effort through price reductions. If such course is followed, the company must consider the amount of stock in dealers' hands and the efforts that the dealer can make to liquidate his high-priced inventory. The amount of inventory will determine, to a large extent, the allowances that the company should make to reconcile past purchases to the proposed price level. In considering the amount of inventory in dealers' hands, the manufacturer will have to determine the normal size of stock each retailer should carry. If the salesmen are in the habit of overloading the retailers, the company will have to recognize this fact in setting a normal amount. In this connection, too, the company should attempt to avoid a price policy which would cause dealers to make unwarranted speculative purchases, not only because future orders would be curtailed, but also because dealers might become financially embarrassed in the event of an extended period of depression.

A further complication is encountered in the piano business by the presence of installment sales. The retailer will be limited in his action by the amount of such sales he has outstanding. If he attempts to pass on to the consumer the advantage of the price reduction, it will often be necessary to make certain adjustments to those purchasers who are still paying for pianos on the installment plan. A refusal to do so may result in returns of a considerable volume of merchandise already sold. For example, if the price of the $500 upright model were to be reduced by $100, a customer who had paid $10 a month on a similar model purchased five months previously would refuse, in all probability, to make further payments. Although by purchasing another piano of the same type he would lose the $50 he had paid, he would save $50 because of the price reduction. Such situations would cause the retailer to appeal to the company for additional adjustments.

The Drayton Company should attempt to formulate its price revision carefully so that the prestige and reputation of the piano will be preserved. The president's decision to make the reduction gradually over an extended period of time seems to be the best plan in this case. In so doing, the Drayton Company avoids taking extreme losses

on process stock and protects its customers in their sales to the public on the installment plan. It does, however, incur the cost of carrying the expensive inventory, since sales will probably be restricted. Since the company does not engage in consumer advertising, it must arrange with its dealers to stress the quality throughout the period of price changes, so as not to confuse its quality piano with other cheaper and inferior ones. Such a course of action will call for a careful study and cultivation of the company's distributors.

The Dameron Shoe Company

In May, 1920, the Dameron Shoe Company, which operated a retail store advantageously situated in the Loop district of Chicago, decided that its inventory was too large. The firm sold merchandise of high quality, and emphasized distinctiveness in style as a selling appeal. Retail prices of shoes ranged from $8 to $20 a pair. The Dameron Shoe Company attracted an exclusive class of customers, and had established a reputation for fine shoes, all of which were sold under the store's own brand name.

In the latter months of 1919, and in the early part of 1920, the sales of the store showed an unusual increase. Prices were advancing, and the management of the Dameron Shoe Company interpreted these signs as an indication that the period of prosperity was to continue. Stores that sold merchandise in which style was featured usually placed most of their orders for spring delivery in the fall, and the orders for fall delivery in the spring. Until the latter part of 1919, however, it had been the policy of the Dameron Shoe Company to place orders frequently throughout the year in order to have the stock conform to changing style tendencies. Purchases in excess of requirements occasionally had been made, when it appeared evident that a speculative profit could be realized through the appreciation of inventory on a rising market. That policy was followed during the latter part of 1919 and in 1920. Consequently, it was impossible to give the customary consideration to the style element. A class of customers who in normal times obtained shoes from medium-price stores could then afford to make purchases at the Dameron Shoe Company's store. These additional sales enabled the company to secure a high rate of stock-turn, in spite of its temporary departure from former merchandising methods.

In April, 1920, when the management realized that a general depression was imminent, the store had accumulated, as a result of this purchasing policy, the largest inventory ever held. This abnormal stock and falling retail prices caused the company to decide on an immediate price reduction of 20%. As a result, the sales of June, 1920, the month in which the reduction was taken, proved to be larger than the sales during any other month of 1920 or 1921. The management was convinced that the net loss was ultimately less than if the reduction had not been made quickly.

Comment

The correctness of the decision of the Dameron Shoe Company on the matter of price revision turns on two general factors: first, the effect of the reduction on the prestige of the store, and second, the relation of the price revision to the merchandising policy. These two considerations determine the ultimate success or failure of the policy of price reduction.

The prestige of the store may be affected either by a slash in prices or by an attempt to maintain them. A drastic cut may tend to injure the goodwill of the company. The store had succeeded in building up a reputation for distinctiveness and had attracted a clientele to whom the quality and style appeal was of more importance than price. Thus, if emphasis were to be put on price, the Dameron Shoe Company would be stressing an appeal quite foreign to its usual policy. On the other hand, if prices were not cut, the inventory would continue high, and the company would be prevented from stocking new goods and from keeping abreast of the style cycle. In either case the company would be facing the danger of injuring its prestige. The importance of reducing inventory, however, in order that leadership in distinctiveness and quality may be maintained, leads to the conclusion that the management was justified in deciding on a cut in prices.

Another set of considerations to which the company should have looked in determining the timing and extent of the price revision involves stock-turn and inventory risk. Not only does a high stock-turn permit a greater utilization of capital and avoid a frozen inventory, but it tends to reduce the style risk, one element of which is the danger of an obsolete stock. This is especially important to the Dameron Shoe Company, since its primary appeal is one of quality and distinctiveness in style. A price reduction that can eliminate a large percentage of the style loss will contribute to the successful operation of a business of this type, even though such reduction does not take place in a falling market. In a falling market, therefore, where the dangers of loss are augmented by the general disinclination to buy, an intelligent analysis of the situation and the selection of the proper policy to follow in revising prices are invaluable.

In general, it is safe to say that in a retail business with a considerable style risk, it is advisable to take a reduction at the beginning of the depression and by so doing eliminate much of the difficulty that may accompany a later reduction. Losses that are sustained in this process can gradually be recouped by increased sales made at prices based on replacement cost. Since replacement cost is the minimum limit to which general prices can fall, the company pricing on this basis is placed in a position as favorable as is any of its competitors and can emphasize to the full its particular appeals.

The Avalon Company

The Avalon Company had manufactured wire nails for shoes for about 35 years previous to 1922. When the manufacture was first undertaken, a patent on the product had been obtained. The original product had been improved at the expiration of the patent, and a second patent secured which had expired in 1920. Distribution of the nails was effected through wholesalers of shoe and leather findings, hardware, groceries, woodenware, and notions. Orders were received from the wholesalers by mail. Two representatives were employed by the company who called upon wholesalers but did not solicit orders. The company had gained so strong a position during the period of patent protection that later efforts of competitors to supplant the Avalon Company's products with their own had been unsuccessful.

The prices of the company's products to wholesalers were based on list prices at which the wholesalers were ex-

pected to sell to retailers. No quantity discounts were allowed the wholesalers, but the company suggested to them a schedule of quantity discounts for purchases made by retailers. The Avalon company sold to wholesalers at a discount of 20% and 7½% from the list price. This arrangement afforded the wholesalers a margin of 26% if they maintained the suggested list prices. In May, 1922, the best selling product of the company was sold to wholesalers at the regular discount from a list price of 18 cents a pound. At that time the price which the company paid for wire was reduced from 5½ cents a pound to 3 cents a pound. Such reduction and a decrease of 10% in the rate of wages paid its employees allowed the company to reduce its list price from 18 cents a pound to 15 cents a pound. The company was desirous of accomplishing that reduction without causing its customers loss on the stocks they had.

One plan suggested was reducing the list price gradually, one cent at a time. Such procedure would reduce the wholesaler's margin by from 4% to 5% on the nails that he had in stock. It was estimated that approximately one year and a half would be required to reduce list prices to 15 cents a pound in this manner. Another plan was to reduce the list price from 18 cents to 15 cents immediately and to allow each wholesaler, during a limited period, to purchase a quantity of nails equal to three months' requirements at the regular discount from a list price of 13 cents a pound. The "three months' requirements" to which a customer was entitled were determined from his average three months' purchases during the preceding five years.

The company decided to adopt the latter method, and estimated that if each wholesaler placed an order for the quantity of nails which he was entitled to purchase at the reduced price, the total orders would amount to approximately 1,000,000 pounds.

Although the company was obliged to reduce the orders placed by a few wholesalers who asked for more nails than they were entitled to obtain, the total orders received equaled only about one-third the above quantity. No dissatisfaction at the action of the company was expressed by any of the wholesalers.

Comment

The Avalon Company, operating under the protection of a patent, had built up such a strong position that, even after the expiration of the patent, the company enjoyed considerable freedom in its price policy. This favorable position was the result of the careful and judicious merchandising of a good product, and an equally good procedure should be followed to permit the maintenance of such advantage. While the company enjoyed greater freedom in the short run, its long-run policy should be governed by proper merchandising methods. In 1922 the Avalon Company had come through the years of poor business, and the market was relatively strong. Therefore, the significant principle of this case is not one of necessity as in the case of the Dameron Shoe Company, but one of policy and successful competition. The entire reduction was represented by lowered manufacturing costs, and it is probable that competitors were able to benefit proportionally. Hence, to maintain its strategic position in the trade, the Avalon Company should have cut prices.

The chief question is how to pass on to the dealers and eventually to the consumers the reduction in price. The Avalon Company, dependent on whole-

salers for its entire distribution, would have to consider that the dealers are carrying stocks of goods and that any revision of prices must be adjusted so that the wholesalers will not suffer a loss on the stocks that they are carrying. Thus, the problem resolves itself, not only into one of competition and policy, but also into one of protecting the dealers against inventory loss. By the first plan suggested, the Avalon Company would have required about a year and a half to accomplish the reduction, whereas the plan they accepted was put into effect in a month. The plan of the company to sell below the new list price was wise in that it allowed the dealers to adjust their inventories to a level commensurate with the new list price if they had not been buying in excess of their requirements in expectation of a speculative profit. If this was the case, the company was in no way obliged to protect those dealers who were speculating, for speculation is not one of the functions of this type of wholesaler. The fact that only a small part of the orders received at the lower price had to be reduced, showed that only a few dealers were attempting to abuse their position or to cover previous speculative purchases.

This case is a further example of the primary need of a manufacturer to protect and cultivate his channels of distribution, so that a close continuity of interest will be effected. In price revision, whether up or down, the time and extent of a change should be so correctly estimated that the even distribution of goods will not be disrupted. The protection of dealers is an essential whether the price change is caused by necessity, as in the case of the Drayton Company, or as a question of policy and elimination of possible competition, as in the case of the Avalon Company.

Conclusion

From the foregoing study of these cases it is evident that the changes in price policy necessary in a falling market are clouded and complicated by various considerations and that the best policy cannot be laid down for all concerns. Even the commonly accepted theory, that it is best to take losses promptly by a revision of prices to the full extent necessary to clear out inventory, cannot be applied indiscriminately. Each set of circumstances determines the advisability of the revision and the methods to be used in carrying it out.

A few of the various considerations involved in the three cases which prevent the establishment of a general doctrine may profitably be reviewed.

Production

1. *Commitments.* The company must consider the raw material that it is carrying and its commitments for further purchase.

2. *Monopoly and patent protection.* While a monopoly and patent protection gives a merchant protection from the short-time point of view, in that it limits the scope of competition, he must not allow this temporary protection to blind him to the principles of good merchandising.

Marketing

1. *Style risk.* Style risk alone is often the cause of a revision of prices, and when it accompanies a reduction due to generally falling prices, there arises a serious problem. The stage in the style cycle and the speed with which it is moving must be carefully considered.

3. *Passing on the reduction to the consumer.* If the reduction is not made

merely to widen the dealers' margin, the company must get the dealers to consider the effect of any attempt on their part to withhold the reduction from the public.

4. *Competition.* The actions of competitors and their ability to meet the price cut must be taken into account in formulating the plans for the given concern.

5. *Type of market.* The elasticity of demand for a product will determine whether the price cut is a means of widening the market.

Psychology of the Revision

1. *Effect on consumers and dealers.* The company must at all times protect the channels of distribution, and it must consider the effect of the price cut on customers and on dealers. Will the price change diminish confidence in the product or maker, hurt the prestige of the goods or of the store, or cause a holding back of demand in anticipation of further reductions?

2. *Competitive conditions.* Any price revision should be undertaken with the aim of setting the price in harmony with the general level as determined by competitive conditions, the cost of manufacture, and the demand of purchasers.

Finance

1. *Amount of installment sales.* The amount of installment sales will affect the ability of the dealer to pass on the reduction and will determine the number of adjustments necessary.

2. *Financial strength of the concern.* The extent to which a reduction can be carried and the time at which it can be effected are governed in a large measure by the financial condition of the concern.

Conclusion

Obviously, if a price reduction is intelligently considered, the necessity, extent, methods, and effects of the change will be determined from an analysis of the importance in the individual case of the above factors, or of others. Indeed, it can safely be said that any important program of price policy which attempts to follow a general formula and which does not consider the surrounding conditions is not likely to prove successful.

REVIEWS OF BUSINESS LITERATURE

INSTALMENT SELLING

By JAMES H. PERKINS

"THE Economics of Instalment Selling," by Professor E. R. A. Seligman,[1] McVickar Professor of Economics at Columbia University, is the leading scholarly statement on the subject that has been produced. Unlike many of the speeches and pamphlets on the subject which have attempted to assemble sufficient facts and principles in a way to prove some pet theory, Professor Seligman has made such facts as are obtainable and such principles as are recognized lead him to his conclusions.

The book builds up a complete history of the movement, and goes in detail into the methods employed at the present time. The figures which Professor Seligman has collected as to the extent of retail selling, and its proportionate place in the general retail sales of the country, are surprising, in view of the statements which have been current. He estimates that the total amount of durable consumption goods sold under this system in 1926 amounted to about $4,500,000,000 out of a total retail sales of about $38,000,000,000, and that the total amount of outstanding instalment paper was about $2,000,000,000. Many people have estimated that of the automobiles sold about 75% were sold on the time-payment plan, whereas his figures show about 59%.

That part of the book which deals with the nature of consumers' credits seems to be possibly unnecessarily detailed, and gives the impression that Professor Seligman is answering opinions which have been put forward—which opinions seem hardly to warrant the time devoted to them.

The chapter on "Luxuries and Necessities" is in some ways one of the best in the book, and could be read to advantage by a popular audience, also those parts of the book which point out the fact that under a proper down payment plan the purchaser is not, in effect, paying for more than he uses. In other words, he clearly brings out the point that if the average life of an automobile is five ye s and it is paid for in one year, at no time during the period of payment has the purchaser used an amount of goods proportionate to that which he has paid for. He distinctly recognizes, however, the difference between the use of the goods and the second-hand market value for the goods. The latter subject, however—upon which there has not up to the present time been a sufficient history on which to base a satisfactory conclusion—he more or less leaves as one of the problems. The effect of the system upon production is also dealt with carefully. The conclusion seems to be that it is of less importance than has been currently supposed.

The second volume of the book is given over to a careful study of certain phases of the problem, with a series of figures and charts that go a long way toward taking the subject out of the realm of speculation and basing it upon

[1] Edwin R. A. Seligman, *The Economics of Instalment Selling*. (New York, Harper and Brothers, 1927.) 2 volumes.

facts. In dealing with the effects of a depression upon the system, he takes the period of the coal strike in the anthracite region, and gives the history during that period of the General Motors Corporation.

It may be regretted that, perhaps because of the different character of the goods involved, and because they may be more distinctly classed as instruments of production, Professor Seligman does not go into the history of the credits given on agricultural implements, which caused the bankers of the country so much worry a few years ago. Also—as is natural for a scholar—although he mentions many of the dangers involved in instalment selling, it is doubtful whether he emphasizes sufficiently the fact that the elimination of many of these dangers lies in the hands of the bankers throughout the country, through the application of sound banking principles to what is, in truth, a new form of credit. He does show, however, that every new form of credit has been in turn subjected to bitter criticism; that, if sound in principle, in course of time it lives through its childish diseases and emerges as a useful agency in the machinery of production.

The conclusion that one must reach upon reading Professor Seligman's book is that there is no fundamental reason why the system of instalment selling should be detrimental either to the social character of the people, to the economic production of long-life goods, or to the credit structure of our industry. The book clearly indicates the danger involved in departure from the principles of sound operation. The system is clearly shown as one which may be of great value to industry or, like any high-powered machine, dangerous if not properly controlled.

Nobody has made a contribution, which should help toward a proper understanding of the operation of instalment selling, of such value as has Professor Seligman in *The Economics of Instalment Selling,* and those people who are serious students of production, merchandising, and credit owe him a debt of gratitude for having done much toward clarifying one of the important untried problems in the industrial life of the country.

THE RESERVE BANKS AND THE MONEY MARKET[1]

"CAN we measure the social consequences of the Federal Reserve System?" "It will be easier to answer this question twenty-five years from now," but Dr. Burgess succeeds in making a comprehensive evaluation by tracing the changes resulting from the system, pointing out its methods, showing how its policies are developed, and noting many points of sounder economic organization and practice. Even though all the results of the system cannot be finally measured, they can at least be more fully understood in their relationship to the national and international money markets, and Dr. Burgess does much to supply such understanding.

With the development of the Federal Reserve System, the definition of its policies, and recognition of its strategic position in the money markets, not only of the United States but of the world, "the student of credit conditions has a new set of statistics to follow." These new considerations de-

[1] W. Randolph Burgess, *The Reserve Banks and the Money Market.* New York: Harper and Brothers, 1927. 328 pp. $3.

mand "clear and exact information as to the daily work of the system and the considerations which help to determine Federal Reserve policies. The lack of general understanding as to operation of the present mechanism has tended "to ascribe rather too much virtue and power to the Federal Reserve System." Some appear to believe that "it is or should be a cure-all for economic ills; that it should completely stabilize commodity prices, prevent bank failures, suppress speculation, and eliminate the fluctuations of the business cycle." Dr. Burgess explains how, with the aid of the comprehensive statistics available, it is possible to note the relations of the Reserve banks and the money market and to draw some conclusions as to results.

The fundamental and non-technical approach in this discussion leads from the changes to the results in the banking and monetary systems, results which are clearly set out and are later developed in their effects on the money market. Copious illustrative material clarifies the treatment.

The book has a different treatment and scope than most of the material now available concerning the Federal Reserve System. Senator Glass in his *Adventure in Constructive Finance* and Mr. W. P. G. Harding in his *Formative Period of the Federal Reserve System* give origin and history; Dr. Kemmerer in his *A B C of the Federal Reserve System"* gives the mechanism; Mr. Goldenweiser in his *Federal Reserve System in Operation* gives the purpose, structure, and functions; Dr. Burgess' book fills the gap. The aim of the book is to consider the practical aspects of the system's operations, to set down something of the philosophy of the system, to determine its relations with the money market, and to trace its policies to their results. Dr. Burgess does not primarily concern himself with the theories involved in loaning, the advisability of credit extension, or the effect of the amount now loaned. This approach permits him to concentrate on the results achieved.

In building a background for discussion of policies and analysis of operations, Dr. Burgess summarizes the organization of the Federal Reserve System and notes the changes in reserves, currency, and methods used in business settlements and in government fiscal operations.

The country as a whole is constantly adjusting its credit supply to its needs through recourse to the New York money market, now the national market for surplus funds; in recent years it has reflected the changing financial needs of agriculture and business in this country and in foreign countries. The New York market deals with what might be called marginal supply and marginal demand for money, and hence is sensitive to any changes in credit conditions. The adjustment within the market itself is normally made through the Federal Reserve System and particularly through the New York Federal Reserve Bank.

Four principal markets make up the money market: two of these, the bill market and the government security market, have direct access to the Reserve banks; the commercial paper and the stock exchange money markets must go through the member banks. The Reserve banks, ordinarily, take the initiative only in dealing in government securities.

The bankers' acceptance, or bill, market has developed with the Federal Reserve System. Though generally used in foreign trade, and despite its numerous theoretical advantages, the bill has not gained a prominent place in financ-

ing domestic trade. Greater use of the bill would be a "desirable feature in our money market." This desirability may account for Dr. Burgess' expectation of increasing use in domestic trade, but a more conservative view of ingrained habits and customs and a deeper analysis of trade financing would lead to little expectation of increasing use other than that normal to the increasing volume of domestic business.

The average business man or non-banker is most interested in the Federal Reserve System's influence on credit conditions effected through its decisions on the four major problems of determining "discount rate, open-market policy, method of dealing with member banks which may be abusing the privilege of borrowing, and proper publicity." The plan of the system is to "safeguard both local and national interests" in each decision of policy. Dr. Burgess might have included an interesting discussion of the relative weight given local autonomy when this is opposed to the national or the international viewpoint, but he prefers to quote opinion as expressed at the time the system was inaugurated, thus tacitly accepting the view that the Federal Reserve Board has no mandatory power. However, at the time the book was written there was little controversy on this point.

Before analyzing credit decisions and their results, Dr. Burgess explains that it is not directly possible "for a Reserve bank to dictate how its credit shall be put to employment. It cannot, for example, restrict loans on the stock exchange and at the same time encourage loans to the farmer. . . . The specific use of credit is the business of the individual member and non-member bank, and the Reserve System is no substitute for sound banking practice." This expression constitutes an interesting commentary on the recent agitation for reduction of brokers' loans. It is in line with the usual reluctance of the Reserve authorities to accept any responsibility for direct interference with speculation.

Changes in discount rate are well-known evidences of credit policy. The rate is normally held between the 4-6-month commercial paper rate and the 90-day bankers' acceptance rate, a relation graphically and interestingly shown by charts. Numerous factors, however, combine to determine rates. International conditions have played dominant parts in recent determination and maintenance and would seem to merit somewhat fuller treatment, considering the present status of New York in international finance.

The wide range of considerations influencing discount rate decisions include "the total volume of credit and its growth, the way credit is being used, the condition of business, and the movements of prices." The treatment accorded each of these factors by the Reserve officials when considering rate changes is explained at length; graphic illustration furthers the discussion. The theories of credit extension and the economic justification for the volume in use are not within the scope of the book. No formula exists for rate determination; reliance must be placed on the judgment of "a group of responsible and well-informed people."

The second main instrument of credit policy—open-market operations—is frequently used to lessen short-time credit fluctuations, to make rate and credit policies more effective, and to pave the way for changes in the discount rate. Current opinion is inclined to grant these operations a high degree of effectiveness; Dr. Burgess recognizes their

importance, but calls attention to the fact that this "effectiveness . . . lies in their effect on the indebtedness of member banks at the Reserve banks." Thus the influence of both open-market operations and discount rate changes "depends not a little upon the amount the member banks are borrowing." "Experience is too limited to justify final conclusions." The student of banking might consider the effect of the increasing supply of credit in this connection.

The publicity given by the Federal Reserve System to its policies and condition is unparalleled among the world's banking systems. "This wide range of information available to the banker and the public forms a background in view of which the banker and the business man may make wise decisions as to their use of credit." Dr. Burgess goes a long way in increasing the public's understanding of this information by such chapters as that entitled "Meaning of the Weekly Statement of Condition."

Dr. Burgess makes some enlightening explanations of a most controversial subject which he styles the "Gold Paradox"—"the way in which this country has absorbed . . . gold since 1920 without any increase in commodity prices." The Reserve System is generally said to have used "a credit policy which by a complex process keeps prices steady, partly by sterilizing the gold as it arrives, and acting almost as though it does not exist,"[1] or as elsewhere stated, to have "virtually impounded this surplus gold or held it, as it were, in escrow, awaiting the time when other countries would want to buy it back."[2]

Dr. Burgess thinks that the situation should be more fully analyzed. In his opinion, "since 1922, gold imports appear to have had something of their usual relationship to the amount of credit in use." They have "brought no important increase in commodity prices, but have had their effect on wages and on prices of real estate and securities."

The Federal Reserve gold policy found expression in four ways:

1. Resistance to secondary expansion.
2. Putting gold into circulation.
3. An open-market and discount policy adjusted to the gold movements.
4. Aid to restoration of the gold standards abroad.

"These policies did not completely sterilize gold but tended to reduce its influence" and to aid "the only real cure, . . . world monetary stabilization." Federal Reserve credit has acted as a "cushion . . . to break the impact on bank deposits of changes in the gold stock." "Primary expansion," that is, the credit extended by a member bank on the basis of the gold import of which it is the original recipient, cannot be checked by the Reserve banks, but by restricting loans to members the Reserve banks can prevent the gold imports from acting as a basis for "secondary expansion" through building member bank credit on borrowings used as reserves. In developing his thesis that the Reserve System exercises no abnormal artificial restraint on credit expansion, Dr. Burgess succeeds in making very clear the methods used and the commendable results achieved by the system. Such conservative practice in credit expansion does not warrant criticism when fully understood.

Restriction of credit expansion is further justified because of the possible temporary nature of much of the foreign credit now employed in the New York market. Dr. Burgess conserva-

[1] Sir Josiah Stamp, *London Observer*, December 5, 1924.

[2] Professor Kemmerer, *The Annalist*, January 6, 1928.

tively estimates that over one billion dollars of foreign money have been placed on the New York market. This is subject to rapid withdrawal, since "in the long run, each gold-standard country is likely to seek to maintain a reserve of actual gold." If this gold is exported, it will be "necessary to travel back over the road taken when the gold arrives. If the gold imports had led to credit inflation, the country would be facing credit deflation as a future possibility."

During the period of imports, "the machinery of the Federal Reserve System has provided a way for storing the gold ready for the use of other nations. When gold exports begin, the Reserve mechanism will again be useful. . . . A cushion of Federal Reserve credit may protect the credit structure from the direct impact of exports."

That Mr. Burgess is well prepared to write such a book is evidenced by his intimate command of the facts and the results achieved by the Federal Reserve System. The wealth of material offered in illustration and substantiation of the Reserve banks' work could hardly be duplicated by an outsider. This intimate connection with the system, however, seems to limit his treatment, since he does not stress local autonomy, management, or smoothness of internal functioning. The book is not an outline of theory or a history of growth, but a statement of results achieved by the Reserve banks, of their strategic position in the money market, and of their methods. The material presented is particularly timely in the present position of the money market.

RECENT CRITICISMS OF DISTRIBUTION

I

WE are living today in a period of marketing revolution. Chain retailing, cooperative marketing, specialty salesmen, market analyses, branding by manufacturers and by distributors — these and many more are evidences of the effort which business is exerting to establish a more effective system for the distribution of commodities from those who produce to those who consume. We have become calloused to the headlong progress which the recent past has inaugurated, and in the press of present-day exigencies, the historical perspective is likely to be lost. But through much the largest part of his economic existence, man produced little but life's necessities; produced them only for his household or for his neighbors; bartered them for his own requirements or for readily exchangeable commodities: there was no need for selling as we know it. After the wider intercourse attendant on the geographical discoveries at the opening of the modern period, the specialization of the workman and his subjection to factory routine, and the concentration of distributive functions in large centers, the way was prepared for the Industrial Revolution. Power and transportation made possible large-scale, centralized production, which proved more economical of human energy. When industrial efficiency reached the point where the production of commodities began to press on the ability of the market to absorb them, selling became a major business problem. Its importance has increased steadily up to the present time. The whole development since the application of power to machinery has occu-

pied less than two hundred years. The emphasis on selling, for America at least, has been manifested during the period since the Civil War. It is remarkable that mammoth factories and agencies of transportation such as we know them should have passed from birth to fruition in so insignificant a portion of the course of human endeavor. It seems just as remarkable that we should expect human minds to perfect the less tangible processes of marketing in the course of three-quarters of a century.

There is no doubt, however, that distribution, measured by its cost, has not yet achieved a desirable degree of efficiency. The problem of reducing this cost has received the attention not only of business, but of students and champions of the consumer, out of whose pocket it is ultimately met. Interesting treatments recently issuing from the latter are *Your Money's Worth,* by Stuart Chase and F. J. Schlink,[1] and *The Distribution Age,* by Ralph Borsodi.[2] This discussion of the present marketing situation is prompted by the contentions which they advance. It does not attempt to deal specifically with every argument adduced; lack of space, furthermore, prevents the thoroughgoing treatment which would be desirable. Despite, however, this unavoidable element of inadequacy, the discussion does attempt to cover, as fully and concisely as possible, the important considerations involved.

Disregarding the actual physical distribution of commodities, which would require detailed consideration of storage and transportation facilities, the main counts on which the effectiveness of marketing practice is questioned by these authors are as follows: adulteration and misrepresentation of commodities; abuse of advertising (and personal salesmanship) in (*a*) unjustifiable volume, (*b*) exaggeration, and (*c*) stimulation of unworthy motives; lack of a desirable degree of standardization of products; expensive accommodation of packaging, styling and other so-called needless services; branding and promotion by manufacturers.

[1] Stuart Chase and F. J. Schlink, *Your Money's Worth,* New York: The Macmillan Company, 1927.

[2] Ralph Borsodi, *The Distribution Age,* New York: D. Appleton and Company, 1927.

II. Assumptions

In the discussion of these strictures, two assumptions of general applicability will be made. The first is this: that the bulk of present-day sales transactions are carried on in a manner entirely consistent with the ethical conceptions which time has thus far developed. There can be no disagreement with the statement that business practice has been consistently improving in its conformity with standards of social advantage. And there will probably be little dispute that the area in which unsocial methods are practiced is much the smallest part of the business world. Accepting the classification of Chase and Schlink, professional and specificational buying exclude the large volume of sales which are made to industrial units and to large organizations; and luxuries also are eliminated because they are bought almost purely on emotional motives and because those who buy them are ordinarily financially able to absorb without harm the loss due to poor judgment. Only for those goods, then, which are bought by consumers and which are outside the luxury classification do the predicated revisions offer opportunity for improved practice. Their volume, though large in the absolute, is small

relatively; and in connection with only a part of this remainder do the listed criticisms apply.

The second assumption is this: that in the industrial organization in which we work, selling effort is necessary. This was not true as long as production was carried on only for a very restricted market, but it has been the case ever since goods were first produced not to order, but for chance sale. For new products, the proposition is obvious, since prospective buyers must be educated to their uses and convinced that they fill a real need. It holds in general for all products, because the buyer will not ordinarily take the initiative and is often not in a position to know the sources or the relative merits of commodities for which he may be in the market. Large-scale buying, to be sure, is increasing, and with its development will come more consumer initiative. But even if all products were bought in large quantities by specialists—cooperatively or otherwise—it would not mean that sales effort could be dispensed with. It would merely involve a decrease in the number of those engaged in that line of endeavor, with an accompanying improvement in their caliber.

Sales promotion, it appears, justifies itself in two ways. The creation of new wants is one. Whether these wants are legitimate from the point of view of society, it is sometimes hard to decide; and it must be admitted that there is real power one way or the other in the hands of those who control the capacities of the best minds and the large funds of capital—to divert the course of purchase to goods which give the consumer satisfaction of more essential needs, or less. The other lies in the stimulus which is exerted on the energy of those engaged in productive activity through their desire to satisfy the wants, new or old, which are continually awakened. In the last analysis, the satisfaction of the socially desirable needs of the consumer is the ultimate test of the validity of any business activity. If selling effort is directed toward that end, it merits public approval; if, on the other hand, it is used for the disposal of products which are of dubious value or of no value at all for the satisfaction of needs, it goes contrary to the dictates of the public good.

III. The Problem

In this light, let us examine the listed criticisms which have been leveled at the marketing system. Adulteration, clearly, involves the sale of a product the constituents of which are other than they are purported to be, and is but one species of misrepresentation. If, however, as in the case of shoddy cloth, the article meets with a demand for a cheap variety of a good, and if the consumer is not deceived as to what he is buying, misrepresentation cannot be said to exist.

Misrepresentation is found in a variety of guises. Food products with a harmful preservative; patent medicines which are represented to be effective curative agents and are no such thing; products which are perfectly good in themselves, but which are described in print or by word of mouth in terms which their value in use does not justify: there is no doubt that the practices here involved are undesirable. All efforts should be directed toward their elimination, both by business and by the public. Effective agencies are needed for prosecution and persuasion. But for the ultimate consumer the remedy of buying in groups or by standards is probably not feasible, at least under present conditions. His buying habits, his prejudices, dictate otherwise. The conve-

nience of buying a commodity already compounded rather than mixing it personally from the proper constituents, and of sending to the corner store for a small immediate purchase rather than planning ahead and buying in quantity through some cooperative association, play too large a part in the lives of the present consuming public to be easily circumvented.

Standardization and the curtailment of expensive services admit of less precise treatment. For all goods which do not cater to the needs of the ultimate consumer, standardization will in nearly every case work for both convenience and economy. For the rest of the field, the question must be approached from the standpoint of what the consumer wants. Variety in commodities is one of the great things which the modern industrial system has provided, and there should be no thought of lessening this essential advantage. The difficulty arises in appraising the value of the multiplicity of brands and varieties with which the market is flooded and such services, modern at least in their large-scale application, as packaging. The manufacture of many brands of equivalent quality is one of the wastes produced by the competitive system. It can be defended only by whatever merits are inherent in that type of industrial organization. But even without regard to such considerations, it is, as we shall see, in a fair way to curing itself. Packaging possesses inherent merits which will insure its persistence: convenience, cleanliness, uniformity of quality and quantity. It is true that it has been resorted to as a means of diverting attention from the quantity dispensed—witness, among others, the 12-ounce package of coffee and the 10-unit package of razor blades. What is needed in such cases is not so much a change in the package, which may be convenient and otherwise economical in itself, but rather a more definite effort on the part of producer and distributor to make clear the elements of the transaction. Equality of understanding between buyer and seller is essential if the buyer is no longer always to beware. And the confidence of the consumer in the sincerity of those to whom he looks to fill his requirements is too necessary an adjunct to large-scale business to be disregarded.

Specialties such as prepared breakfast foods are another factor of the present situation which awakens discontent. It is contended that they add little if anything to the value of the raw product and add exorbitantly to its cost. To a considerable extent, the charge may be true; but aside from what may perhaps be a needless diversity in form, these things do provide the variety which we have considered of fundamental desirability. Styles in clothing and other commodities are essentially of the same character. Their abuse undoubtedly produces waste in the subordination of quality; but general condemnation again butts its head against the wall of what the consumer wants. There is unquestionably room for improvement; considerable control over the direction of consumer purchasing power rests with the men and the capital which are found at the top of the industrial scheme; but as long as there exists a demand among the populace for variety, for convenience, for any satisfactions other than purely rational ones, it will be profitable and in the main socially desirable to indulge it.

That is the crux of the problem. For that class of goods and services, on the one hand, which clearly involves deception or degradation of tastes for the consumer, we can have only censure; and only approbation, on the other

hand, for those which just as clearly cater to legitimate needs in an economical manner. The trouble comes in the large border zone. It is difficult, if not impossible, to determine what needs are "legitimate"; individual judgment is involved, and individuals do not agree. Thinking on the subject, however, is undeniably valuable, and the time may come, with the improvement in the social sciences, when such determination will be more nearly practicable.

For the present, it is sufficient to consider the disturbing effect upon business which is produced by the success of concerns which apparently disregard the fundamental social requirements of economic activity. If a competitor builds up a large volume in a product, or by methods which seem questionable, shall the sales manager refrain from the same sort of practice at the risk of declining volume of sales or perhaps even elimination from the field? If the course of economic gain does not coincide with that of social benefit, shall individual prosperity be sacrificed to some ethereal concept of altruism? It is a problem with which many businesses are at some time faced. Granted that the two are irreconcilable; then the decision rests between the exploitation of the system of profit incentive on the one hand, and, on the other, the abandonment of business activity to those whose scruples are less acute or less developed. It is a hard choice, if it must be made.

But the experience of isolated concerns is not conclusive. Business has been developing a growing and well-founded conviction that, to use the pat phrase, the path of service is the path of success. The proposition is reasonable when it is considered that the basis for stable industrial organization on a large scale must be that of mutual confidence and sincerity. Without them, markets cannot be held, even if they can be gained in the first place. Critics generally have overlooked or underestimated the effect of competition on any concern which seeks to insure its own continued prosperity at the expense of those to whom it sells. Save in those products where quality cannot be determined by inspection or perhaps even by continuous use, the failure of any commodity to provide the consumer satisfactions which it was bought to provide, brings on the positive check of diminishing repeat purchases. Few products are not subject either to repeat sale or to replacement; and even for those few, any large variance with quality or price standards makes itself felt through its effect on the product's reputation with the market.

Successes apparently attained in spite of these natural correctives may be explained, on this hypothesis, in two ways. Both arise from the fact that the workings of economic forces take time: that situations are possible in a restricted period which the long run irons out. For certain products unsound conditions may exist for some time before the reactions which they ultimately awaken are apparent. For others, the product itself and the means used for its distribution may be quite sound, but through some sort of monopoly control, by patent or perhaps merely by innovation, the concern may be able for a time actually to keep itself out of direct price competition. The inordinate profits realized by such concerns are a reward for invention and progress—the differential gains which the profit economy provides for the pioneer. But it must be noted that neither of these exceptional classes of circumstances are of permanent effect in defeating the influences of competition.

Modern industry has had but little

time to work out a formula for the government of its new conditions; and it seems likely that if we could project ourselves fifty years into the future, the inconsistencies with which the present generation is struggling would stand out not as permanent and basic difficulties, but rather as natural fluctuations to be expected in the early course of a new and humanly instituted economic regime. No claim is made that unrestricted competition will of itself cure all the industrial wastes which we are experiencing: some conditions will require the growth of a better code of business ethics, if they are not left to be handled in a less efficient manner by legislation; but, assuming the competitive system, there is no doubt that most of the defects of which complaint is being made are now in the process of correction by natural forces.

IV. Correctives

It will be opportune at this point to summarize the means which are being evolved to produce improvement. That of competition will afford more elaboration, and it will be well to see in some specific aspects precisely what is occurring. The needless multiplicity of brands, for one thing, is curing itself. Duplication of brands on the shelves of retailers ties up capital, retards stock-turn, and often necessitates price reductions to move otherwise unsalable merchandise. Retailers recognize the fact, and under the pressure of competition from the chain stores, which have led in the simplification of stocks through reduction in the number of brands, they are exercising more selective judgment on the goods offered to them. With the extension of this process, only a limited number of brands can secure adequate distribution, and those which fail to do so will tend to be eliminated.

Price competition (quality and price are of course inextricably joined) is a powerful force. Chase and Schlink quote from a statement by a famous advertising agency: "The final purpose of advertising is not to prove the comparative superiority of the article in competition. The object of advertising is to 'take it out of competition,' that it will no longer be compared, but will be accepted by the buyer" [page 166]. Though that is undoubtedly the frequent aim of producers, the possibility of its attainment may well be questioned. Intensive selling effort (advertising is only one of the means) costs money. If the producer is to make a profit, this cost must be shifted to the consumer in the form of a higher price.[3] And it is probably an untenable assumption, under ordinary circumstances, that consumers will for long continue to pay an appreciably higher price for one brand, even if that brand is backed by high-pressure sales methods, than for another of the same quality and attractiveness. Unjustifiably intensive sales effort carries the seeds of its own defeat.

It must be noted also, in connection with this topic, that products are subject to competition not only from other brands and varieties of the same general class, but from other products to which the consumer's purchasing power may be diverted. This factor of intercommodity competition is one of comparatively recent realization, but it is one which most manufacturers must take into account. The growth of trade associations and cooperative advertising indicates that many of them are making it the subject for action.

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[3] Except, of course, in the extent to which any larger volume obtained permits lower manufacturing costs. But sufficient volume is not necessarily obtained; and reduction of costs cannot proceed indefinitely from this source.

But there are important forces in business other than competition working for the perfection of the marketing scheme. One of the most hopeful is the positive factor of scientific method which is being applied in what has hitherto been generally considered a field too emotional or intangible for its proper use. Final attainment in this direction must await the better development of the social sciences—notably that of mass psychology. But on the bases thus far established, business has a considerable accomplishment to its credit. Analyses of the market and improved methods for the selection of salesmen may be adduced as illustrations. Many others could be cited, and a wide extension may be confidently expected in the future.

Beyond business's natural workings society must depend on legal and ethical standards. In law, it may expect to secure the crystallization of only a minimum of the requisite curbs to the antisocial consequences of intelligent self-interest. Legal principles work out slowly, and there are limits beyond which, in a democratic society at least, they cannot go without paternalistic implications. Business in the past has depended too much on the assistance of legislatures and courts—has even invited their supervision by failure to regulate itself and by depending on such governmental favors as the tariff. Legislative bodies are ill equipped, through lack of intelligent background and close contact, to handle current problems with a view toward permanent results rather than the expediencies of the day.

The solution lies in the assumption by business of responsibility for the solution of its own social problems. This implies broadly the development of an effective code of business ethics. In its marketing aspect, as in business as a whole, the tendency toward such an assumption of responsibility is unmistakable. Contrast present practice in this respect with the chaotic situation of half a century ago. Trade associations and the large corporations, which seem to take more readily to the long-time point of view, are constructive agencies. The prime essential, however, is the growth of an intellectual groundwork among business men individually. The fact that well-conceived selfish action tends in the business field to coincide with socially desirable results makes evident the fundamental need for widespread dissemination of sound principles. If the time comes, as expectation seems to warrant, when business itself takes on the mantle of professional solidarity, the ethical problems with which we are faced will have gone their longest way to solution.[4]

V. Advertising

No exhaustive disquisition on the subject of advertising will be attempted; but because it is constantly before the public eye, it oftenest provokes comment and attack, and a few words may properly fall within the limits of this discussion. Personal salesmanship, both in man power and expenditure involved, considerably outranks advertising as a cost of distribution; it is subject, undoubtedly, to the same abuses, though from its nature they are more obscure; and those critics are therefore deficient in their treatment who allow themselves to be carried away by the apparent magnitude of the institution of publicity, to the exclusion of similar considerations in connection with personal selling.

[4] For an excellent and thorough treatment of this general subject, see "The Social Significance of Business," by Wallace B. Donham, *Harvard Business Review*, July, 1927, p. 406.

Three points with regard to advertising may well be made. It possesses, in the first place, undisputed merits, if properly conducted. Its exact contribution to the sales program is not easy to measure, and on that account executives have often erred in their use of it as to types, mediums, and quantity. But it accomplishes certain functions which cannot be performed in any other way; and it is probable that its judicious mixture in the sales program provides in most instances a more economical means of distribution than can be obtained without it.

The second point is this: that repetition alone is ordinarily not reputation, as Chase and Schlink contend. Unless the product proves satisfactory in use, it will not be purchased again, the exertion of continuous pressure notwithstanding. Where quality cannot be judged, the contention may have some validity. But such products are few, relatively; the inability of the consumer to weigh results is often rather apparent than real; and for such products as remain, patent medicines among them, results will be secured not by the elimination of advertising, but by the education of the public to know what they can and cannot do.

It is worth while to note that repetition itself may in some cases be desirable from the standpoint of efficiency, on the assumption that an advertisement in one issue of a periodical is missed by many who will find and read it in the next—in other words, that continuous publicity may be necessary to reach the whole market. Furthermore, new generations and new strata of buyers must constantly be reached if the strong selling force of brand familiarity for a product is to be maintained in permanent intensity.[5] Competition between brands on these bases has occasioned continually augmented expenditures for advertising; but there is a limiting factor in the increasing size of newspapers and magazines and the consequently sharpened competition for readers' attention which, by decreasing effectiveness, restrains the movement.

The abuses of advertising, finally, in extravagant claims and misrepresentation, are checked by two processes. Under normal conditions, the public becomes accustomed to the repeated use of superlatives and imaginative terms, discounts them, and relies more and more on its own judgment rather than on printed representations. Once advertising has in this manner become ineffective, it is obviously to the advantage of its users and of the profession to turn to the more desirable course of moderate statement and truthful description: a tendency recently evident, for instance, in the copy of toothpaste publicity. If the normal reaction does not set in, then resort must be had for correction to the rapidly developing ethical standards of the advertising profession. Extravagant claims more than any other one thing have brought their calling into disrepute; and the more progressive among them are shaping their policies for permanent constructive ends.

VI. Summary

For better or worse, we are living in a world characterized, in its material aspect, by a profit economy and large-scale machine production. Its possibilities for a more comfortable and less arduous ex-

[5] Hotchkiss and Franken, in their study, *The Measurement of Advertising Effects* (New York: Harper and Brothers, 1927), as a result of their test have reached the conclusion that concerns which cease advertising suffer a decline in consumer familiarity with their brands, and that, together with satisfaction from use, such familiarity is probably the most effective means for the stimulation of repeat purchases.

istence are great; its inherent deficiencies no less definite. But except in a minor way, those questions are not here under discussion. The existing order is accepted by assumption, and the problem is how, from the marketing standpoint, to make the best of it: to minimize the difficulties and to promote the advantages. The foregoing pages have dealt mainly with the negative side of the picture; but the analysis has arrived at the hopeful conclusion that in general, and in the long run (essential restrictions, and not damaging to the proposition) the efforts of enlightened executives in the direction of more efficient and more economical distribution are in line with the social advantage of the community. When a permanent advance in effective merchandising is achieved, the benefit is that not solely of the concern which utilizes the new method, but of the populace at large. If there exist, however, difficulties which human capacity will be unable to solve, even ultimately, then their effect must be charged off in the reckoning against the benefits which the economic system provides.

It is not only the advantage, but the duty, of the community—of business most of all, for business is most closely affected—to bend its efforts toward the perfection of distributive methods. Without honest criticisms such as those we have examined, the resolution of the tangle which distribution now presents will be sensibly slower. But the marketing situation is intensely dynamic, the period of its development has been short, and its problems, only to be solved by the workings of human faculties, will of necessity require time for solution.

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